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# People and Baboons in Cape Town: Rethinking Interactions with Wildlife in Urban Areas

Kinga Psiuk

Stockholm Resilience Centre
Kräftriket 2B, Stockholm University, SE 106 91
info@stockholmresilience.su.se
www.stockholmresilience.su.se

A PARTNER WITH
The Beijer Institute of Ecological Economics
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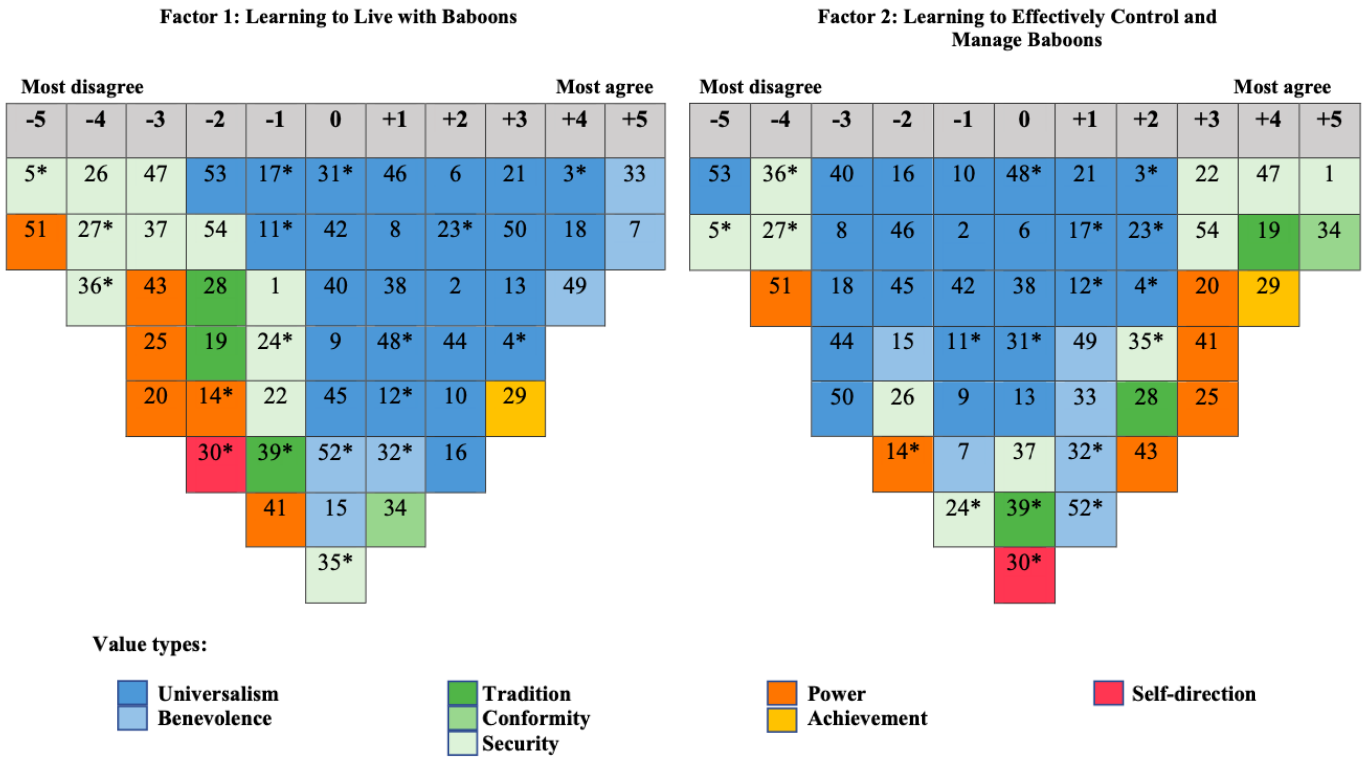
Abstract

Humans and wildlife live in increasing proximity, which leads to negative human-wildlife interactions. Management efforts are often focused on "controlling" species that are considered problematic, often downplaying, or even neglecting the perceptions and values of affected communities. There are many ideas about what human-wildlife interactions should look like and these are constantly evolving alongside our values. These ideas are essential for informed and legitimate wildlife management. This study investigates what type of human-baboon interactions residents from seven baboon-visited areas in Cape Town want. Using Q-method the results showed that there are two main perspectives: *Learning to Live with Baboons* and *Learning to Effectively Control and Manage Baboons*. These are motivated by different sets of values. *Learning to Live with Baboons* is focused on the natural and social outcomes recognizing the agency of the humans and baboons. In contrast, *Learning to Effectively Control and Manage Baboons* focuses on maintaining a stable state of society while perceiving nature as something that can be controlled. Despite differences, the two perspectives have several points of the agreement including the end of abusive language toward baboons, recognition of context and value differences, and establishment of collaborative conflict resolution processes. The study also explores how values shape the broader relationships that people wish to have with wildlife and how these can shift depending on the context. Finally, the practice of reflexivity is suggested as one of the steps toward more inclusive human-baboon governance. The thesis concludes by recognizing that subjective perceptions of human-baboon interactions are not pure dichotomies, but rather a complex web of agreements and disagreements, each being a manifestation of different subjective realities.

*Keywords:* wildlife management, human-baboon interactions, Cape Town, values, WVO, Q-method, reflexivity, inclusive conservation

Graphical abstract




*The Q-method exposed two main perspectives guided by different configurations of values.*

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# 1. Introduction

Humans and wildlife share 56% of land globally (Gross et al., 2021). This leads to frequent interactions between people and wildlife that can foster positive outcomes e.g., happiness (Buijs & Jacobs, 2021) or negative outcomes e.g., fear (Johansson & Karlsson, 2011). This thesis will focus on the *negative human-wildlife interactions* (HWI), often labelled as human-wildlife conflicts (Buijs & Jacobs, 2021; Nyhus, 2016). These interactions are defined as human or wildlife actions that have negative effects, for example on economic security, recreation activities, or biodiversity. However, negative HWI can also be conceptualized as a perception of a threat to human safety, security, or property (Nyhus, 2016). These conflicts are not new and have been studied extensively across the globe including their drivers (Lamarque et al., 2009), factors (e.g., knowledge, incentives) influencing the HWI (Dickman & Hazzah, 2016), monetary compensations for damages (Anthony, 2021), as well as effects of mitigation strategies on HWI (Kolinski & Milich, 2021).

Yet, research on negative HWI and wildlife management efforts often frame the problem of the HWI in a narrow sense, focusing primarily on the species that are in direct "conflict" with humans, leaving out other elements of the system (Madden & McQuinn, 2017; Sala & Torchio, 2019) such as the human dimension of HWI, i.e., the thoughts and relations with wildlife that shape people's interactions with them (Dietsch et al., 2017). These vary from person to person, which can lead to additional human-human conflicts, making wildlife management challenging (Nyhus, 2016). In response to this challenge, a call for more holistic, plural, and inclusive conservation has been made by some scholars (e.g., Fougères et al., 2020; Sala & Torchio, 2019; Wyborn et al., 2021).

The social-ecological approach to conservation has been advocated as a way to move towards what is called *inclusive conservation* (Fougères et al., 2020; Sala & Torchio, 2019; Wyborn et al., 2021). This shift emphasises that the world is a dynamic, self-organising system of multiple integrated and interdependent components. Thus, conservation initiatives must look beyond ecological relations toward social-ecological relations (Fougères et al., 2020). Inclusive conservation does not mean uniformity of opinions. It invites the tensions and encourages work throughout these tensions (Büscher, & Fletcher, 2019; Wyborn et al., 2021), acknowledging deep value differences (Fougères et al., 2020). This approach sees communities as a generator

of ideas, initiatives, and solutions that can help produce legitimate long-lasting decisions (Fougères et al., 2020).

The inclusive conservation paradigm postulates that conservation should be seen as a social practice that involves multiple – often conflicting – values (Büscher, & Fletcher, 2019; Fougères et al., 2020; Sala & Torchio, 2019; Wyborn et al., 2021). However, value pluralism is frequently neglected in conservation research and practice. The emergence of inclusive conservation goes hand in hand with the rise of co-production and participatory research. By engaging in participatory approaches, the experiences of actors that are often unrecognised or have limited access to contribute, are acknowledged and respected (Wyborn et al., 2021). Bridging the realities of affected communities within research and practice can enrich conservation science by inspiring new ideas on how to address challenges (Tengö et al., 2014). However, tools are needed to make their diverse voices heard within academia and policy practice. Using narrative-based methods has been proposed as a way to foster creativity in imagining the future that goes beyond the dominant paradigm and promoting constructive engagement with possible alternatives (Wyborn et al., 2021). Recognising and mobilising value pluralism opens the possibility for various types of meaningful relationships with wildlife and people, consequently initiating paths to more inclusive conservation practice. This is especially important in a dynamically shifting world, where values and relations with wildlife are evolving (Manfredo et al., 2009, 2020), posing a challenge to inflexible wildlife management and conservation practices.

This study presents a case of HWI in the urban setting of Cape Town, South Africa, where Cape Chacma baboons are regular visitors to the urban areas, drawn by the availability of high-calorie food (Hoffman & O'Riain, 2012). Recognising the role of human perceptions in human-baboon interactions, the analysis will be guided by the overarching research question: *How do residents from baboon-visited areas in Cape Town view human-baboon interactions and how do they think these interactions could be improved?*

This is further divided into the following sub-questions:

- *What key viewpoints exist regarding baboons among affected residents, how do they differ, and what types of values define them?*
- *How do values relate to the broader relationships that people wish to have with wildlife and how do these relationships shift depending on the context?*
- *What are the points of agreement between different viewpoints?*

To answer these research questions, this thesis uses value theory and Q-method to study subjective perceptions systematically. Participants from seven baboon-visited areas were asked to reflect on human-baboon interactions and how these could be improved. This approach generated distinct viewpoints of human-baboon interactions and the underlying values behind these viewpoints. The objective of the study is to produce a descriptive account that draws explicit links between perceptions and values, consequently helping local decision-makers to navigate the complex landscape of human-baboon and human-human interactions.

# 2. The Case of Human-baboon Interactions

The study took place on the Cape Peninsula, South Africa which has a surface of 470 km2 with a mountain chain that stretches from Table Mountain to Cape Point. Most of the area is under national protection (Hoffman & O'Riain, 2011), yet low-lying land is heavily urbanised with the total population of Cape Town reaching 3,740,026 inhabitants (Statistics South Africa, n.d.). The increasing human population is not the only inhabitant of the area. Vast wildlife inhabits the space including Chacma baboons (*Papio ursinus*). Currently, there are 11 urban baboon *troops* i.e., hierarchical groups under the leadership of a certain alpha male (Bergman et al., 2003) on the Cape Peninsula (see Figure 1). These troops vary in size from 17 to 110. There has been a steady increase in the baboon population, with the most recent estimate of the total urban baboon population of 495 (City of Cape Town, 2021a).


*Figure 1*. Eleven urban baboon troops on the Cape Peninsula managed under the Urban Baboon Programme. The troops are split into Northern subpopulation (Constantia 1 and 2, Mountain 1 and 2, Tokai and Zwaanswyk) and Southern subpopulation (Slangkop, Da Gama, Waterfall, Smitswinkel Bay, and Groot Olifantsbos).

Baboons are intelligent, opportunistic, and omnivorous, making them very adaptable and able to thrive in a human-dominated environment and exploit new food sources (Else, 1991; Johnson et al., 2013). They engage in urban foraging events (Fehlmann et al., 2021) with some involving direct human interactions (Hockings et al., 2015). These interactions involve, amongst others, entering properties in search of food, taking food, and exploiting picnic areas (Author's Observations, October 2021). In response to these interactions, the first management actions were taken in 1999 (NCC staff, personal communication, March 22, 2022). At that point, the Baboon Management Team was formed by authorities, NGOs, the public, and consultants to develop what is now known as the Urban Baboon Programme (UBP). The UBP is under the jurisdiction of the City of Cape Town who delegates the responsibility to manage the baboons to the service provider based on a three-year tender. The UBP aims to keep baboons outside of the urban areas for 90% of the daylight hours (City of Cape Town, 2021b). This is done mostly by "holding the line" between natural and urban areas by rangers with paintball markers as a deterrent (Cape Nature, 2021). This task can be complicated by landscape features such as dense vegetation or differences in elevation which require rangers to climb and decrease their efficiency (Author's Observations, October 2021). The service provider is also responsible for assisting with various tasks, including euthanasia of problematic baboons that are considered a high risk to humans and baboons (Baboon Technical Team, 2019). Scientific support to improve conservation practices is provided by the Institute for Communities and Wildlife in Africa which is a research unit at the University of Cape Town. Figure 2 outlines some key events and changes to the UBP.

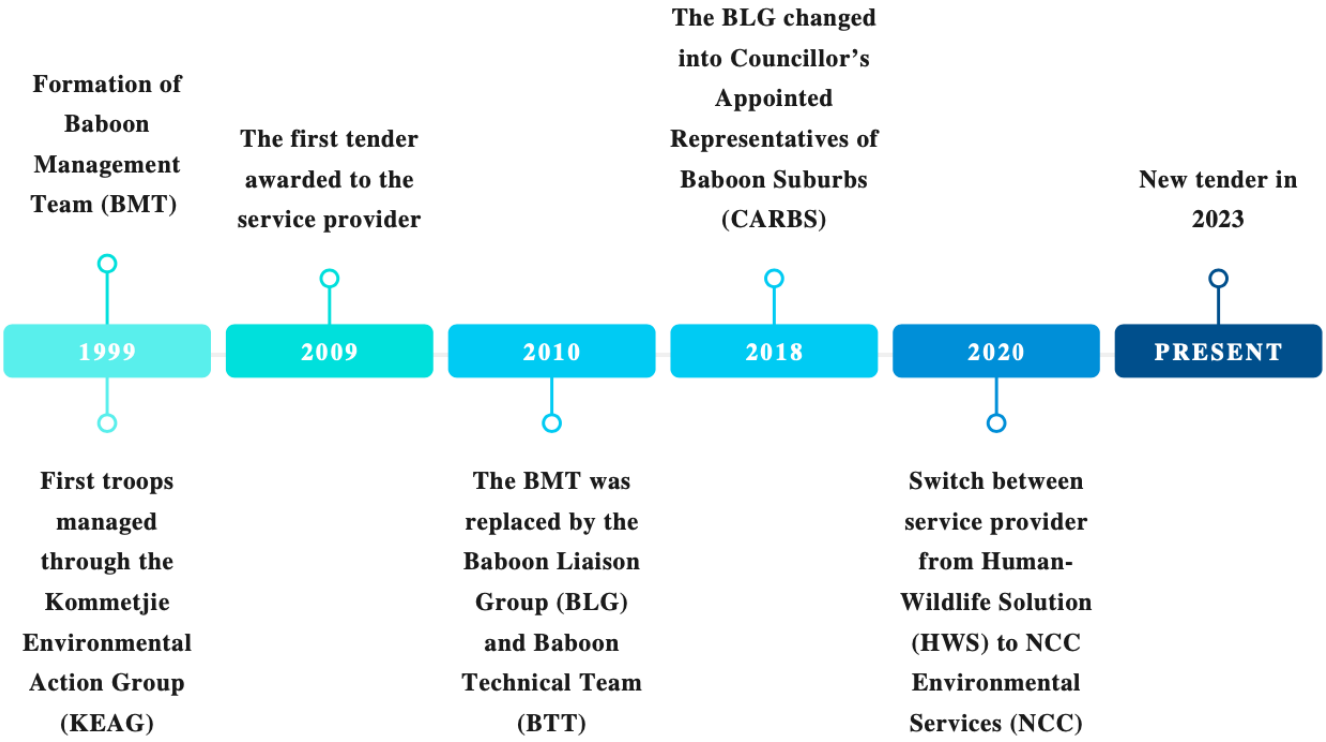


*Figure 2.* The timeline illustrates the key events that led to the UBP as we know it today. The information was sourced from NCC staff (personal communication, March 22, 2022) and O'Riain, (2015).

The management efforts are accompanied by a heavily polarised debate with some people displaying more and others less tolerance towards the situation. The management strategies themselves e.g., paintballs or euthanasia are controversial. Furthermore, residents are questioning the level of engagement between authorities and affected communities, which resulted in the formation of informal, local community groups (e.g., Green Group Simonstown) through social media channels. These are used to educate the residents, warn residents about approaching troops, initiate local baboon-proofing and awareness campaigns (see Figure 3), and mobilise waste management improvements, among others.


*Figure 3.* On the left, a poster about waste awareness created by residents and a local NGO. On the right the figure of a baboon on the side of the road. The white lines reflect in the dark, making drivers aware of baboons passing the road after dark which is a unique behaviour of urban-dwelling baboons. Both pictures were taken in Simon's Town. Photos: K. Psiuk.

# 3. Theory

In this section, first the concept of values and value types will be explained, together with their motivational purpose of guiding people's perceptions and behaviours. Values also shape our preferred relationships with wildlife, which are reflected in what is called Wildlife Value Orientations (WVO). Studying WVO alongside broader values can help us understand not only **what** these preferences are but also, **why,** and **how** they emerge.

## 3.1 Value Theory: The Story of the *Why* and *How*

This study embraces a system approach to study values, which assumes the reciprocal relations between individual perceptions and the interacting social and ecological world (Manfredo et al., 2017). Over the past two decades, value theories advanced our understanding of the rationales guiding people's behaviour, helping us to navigate the complexities of sustainability research and practice by exploring the moral and emotional foundations of human-nature interactions (Jones et al., 2016). In particular, value theories have proven useful in the context of conservation (Schultz et al., 2005), hunting (Radder & Bech-Larsen, 2008), or ecological restoration (Bright et al., 2002).

V*alues* are representations of what is important in a person's life (Schwartz, 1994). They are criteria used to evaluate events and people and to select and justify actions. According to the value theory by Schwartz (1992), values can be grouped into ten *value types* (see Table 1). This grouping was proposed to account for motivational similarities and differences between different values and the goals that the underlying values attain (Schwartz, 1992). This resulted in a two-dimensional value typology. The first dimension is related to a conflict between one's own emotional and intellectual interests versus the preservation of the status quo labelled as an *opportunity-organisation dimension*. The second dimension is concerning the extent to which actions promote self-interest or the interest of others including nature, called *individual-social context outcomes* (see Figure 4; Rohan, 2000; Schwartz, 1992). These value types and underlying motivational dimensions are what structure the human value system (Rohan, 2000).

Table 1

*Value Types and Representative Values*

| Value type and definitions | Representative value |
|---|---|
| Power: centres around social status, control and/ or dominance over people, nature, and resources. | Control<br>Dominance |
| Achievement: focused on success and competence to reach certain objectives. | Competence |
| Hedonism: pleasure and gratification for self. | Pleasure<br>Enjoyment in life |
| Stimulation: centres around novelty and exciting life. | Daringness<br>A varied life |
| Self-direction: is about the independence of action and thought, exploring, and creating. | Independence |
| Universalism: centres around appreciation, tolerance, understanding, and protection of people and nature. | Unity with nature<br>Protection of the environment<br>Equality<br>Forward-thinking<br>Justice |
| Benevolence: focused on enhancement and protection of prosperity of people and nature with which one is in regular contact. | Responsibility<br>Transparency |
| Tradition: is about respect and commitment to traditions and customs. | Avoid extreme feelings/ actions (moderation) |
| Conformity: is about control of impulses and restriction of actions that could upset or harm other people and nature. | Obedience |
| Security: focused on stable, safe, and harmonious society and relationships. | Order<br>Personal/ family security |

*Note:* The definitions of value types are based on Rohan (2000) and Schwartz (2006).

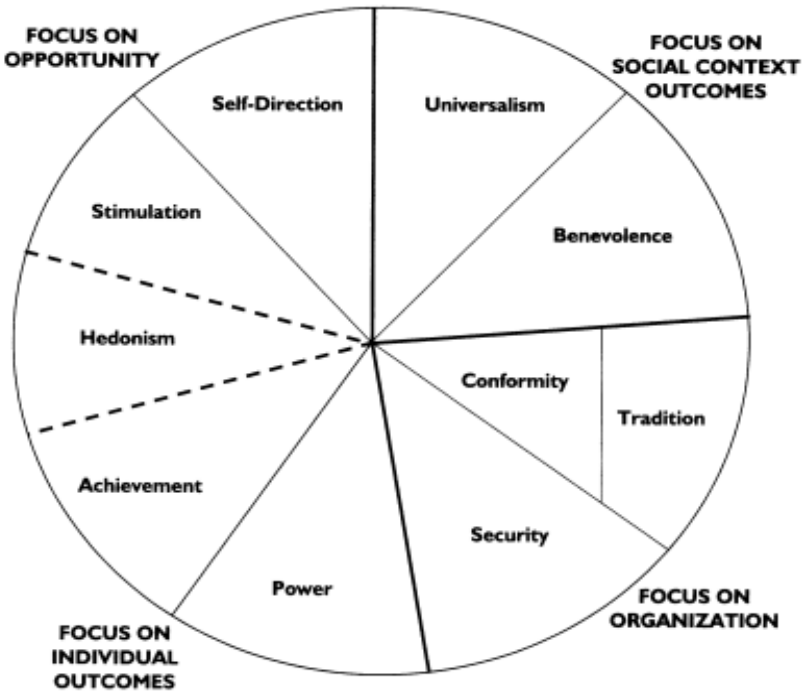


*Figure 4.* The two-dimensional value typology proposed by Schwartz (1992) groups values into value types to account for motivational similarities and differences between different values. The figure was retrieved from Rohan (2000).

The value types that are closest to each other on either of the dimensions are the most attuned. For instance, benevolence and universalism are concerned with others' well-being over egocentric motives (Schwartz, 1992). By contrast, the value types that are distanced from one another are indicative of greater incompatibilities. For example, there is a mismatch between achievement and power versus universalism and benevolence because the former pursues their own success and dominance over other humans- and non-human beings, while the latter perceives others as equals and is concerned with their well-being (Schwartz, 1994). This was supported by research investigating the structural match in various samples (Schwartz, 1992; Schwartz & Boehnke, 2004), showing contrasting effects of the opposing value types (Sagiv & Schwartz, 2000; Schwartz, 2006).

The value types can be prioritised differently between people reflecting the relative importance of different value types (Schwartz, 1992). Values develop early in life throughout socialisation processes and change little over a lifetime, however, they can be influenced by value-relevant experiences and demographics i.e., age, gender, and education (Schwartz, 2006). Context is also vital for value type prioritization. Schwartz and Bardi (1997) suggested that the importance of attainable values is upgraded, and the importance of blocked values is downgraded. In other words, people can adjust their values to the circumstances. Yet, the priority of blocked value can also be upgraded. This is postulated to be true mostly for values concerned with security and material well-being (Schwartz & Bardi, 1997). In summary, despite the stability of values, the world around and people's interactions with it influence the value type prioritization and perceptions that in turn affects the way people interact with the world (Schwartz, 2006).

Values are also a source of motivation. They help to achieve the goals that are important to oneself. These goals are directly related to individual beliefs about who one is i.e., *self-concept* (Schwartz, 2006). The motivational properties of value types are seen as a function of human necessity to satisfy individual needs, coordinate social interactions, and care for the welfare of groups (Schwartz, 1992). In other words, attitudes and behaviours are not only functions of values, but also of awareness of the consequences these would have on the *value object* (self, others, or all living things; see Figure 5; Arias-Arévalo et al., 2017; Schultz et al., 2005; Stern and Dietz, 1994).

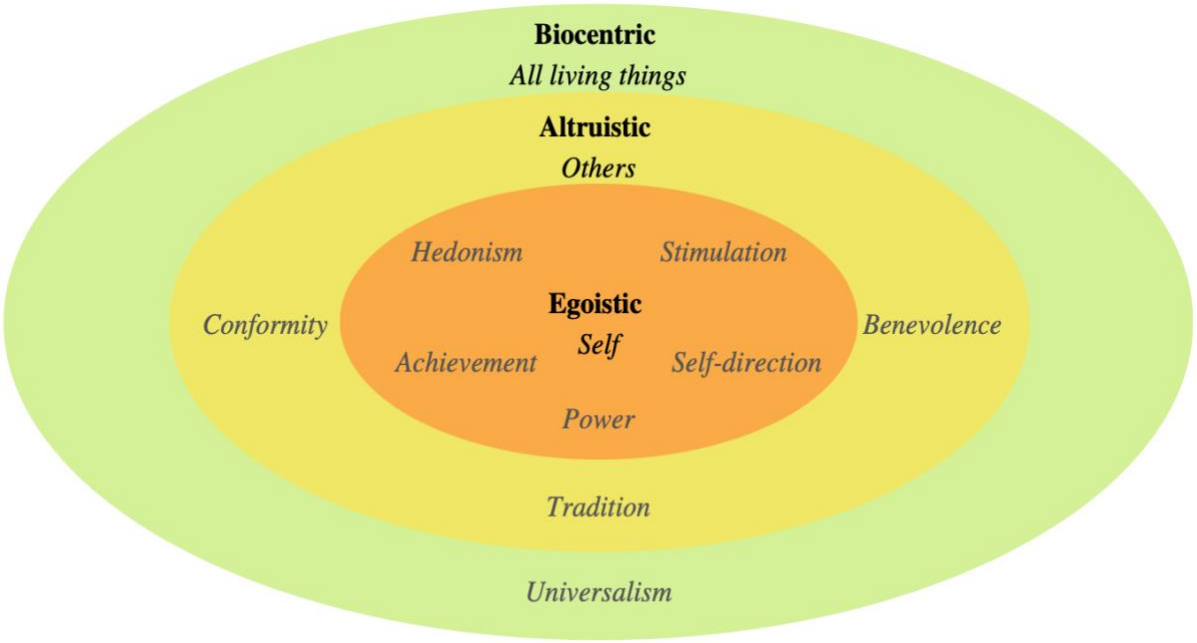


*Figure 5.* The relationship between environmental concerns (egoistic, altruistic, biocentric), value objects (self, others, all living things), and value types. Security was not included because it is postulated to represent mixed interests of individual and/ or collective (Schwartz, 1992) and is likely to relate to several types of environmental concerns.

## 3.2 Wildlife Value Orientations: The Story of *What*

What kind of relationships with wildlife do people tend to prefer? In wildlife conservation, this is referred to as *wildlife value orientations* (WVO; Manfredo, 2008; Dietsch et al., 2017). People with a *mutualistic* WVO focus on animal well-being and view animals as beings capable of relationships with humans. They often engage in care activities such as nurturing hurt animals and are less likely to support lethal management strategies. In contrast, people with a *domination* WVO put more weight on human well-being and are more likely to support lethal management strategies (Manfredo, 2008; Manfredo et al., 2017; Dietsch et al., 2017).

Yet, the question of what values shape WVO often remains omitted. For instance, people who hold mutualistic WVO are less likely to accept management interventions that could harm animals, in comparison to those with domination WVO (e.g., Sijtsma et al., 2012; Teel & Manfredo, 2010; Whittaker et al., 2006) but little is known about the motivation for accepting or rejecting these strategies. One study showed the connection between universalism value type and mutualistic WVO in the context of biltong hunting (i.e., the cultural activity of hunting for the wildlife meat), where the motivation arises from the appreciation of nature and

concern for animals instead of random killing (Radder & Bech-Larsen, 2008). Recognizing the merit of the qualitative approach by Radder and Bech-Larsen (2008), the current study builds on this attempt, however, instead of looking at different values individually, it looks at value types in relation to one another. This approach allows one to define the WVO with regards to its motivations and understand how that relationality within value types can shape preferences for interactions with wildlife.

# 4. Method

The research design was a mixed-method, exploratory case study, meaning that the primary focus was a placed-based understanding of what human-baboon interactions mean to participants without the aim of generalising the results to the population. The study followed abductive reasoning, starting with data, followed by imagining possible hypotheses and explanations for the data, verifying them by investigating the data further, and returning to theoretical accounts until reaching the most plausible explanation (Charmaz, 2006). In this study, Q-methodology was used which also includes methods such as participatory observations and semi-structured interviews, for concourse creation and data collection respectively. The mixed-method approach allows for a richer understanding of the context and access to a broader range of voices. For critical reflection on data sources and methods, see Appendix A.

## 4.1 Narrowing the Scope of the Study

To make the study feasible within a given time frame, the choice of which areas to include in the study had to be made. Out of 11 baboon troops, five spend the most time in the urban areas according to recent reports (City of Cape Town, 2021b). The intensity of negative human-baboon interactions in areas visited by these troops is considered high, with views about human-baboon interactions divided (NCC staff, personal communication, October 18, 2021). Moreover, the areas selected aim to cover a range of social-economic contexts. The selected areas are presented in Figure 6.


*Figure 6.* Seven study areas commonly visited by different baboon troops. The orange represents areas visited by the Slangkop Troop, the yellow by the Da Gama Troop, the green by the Waterfall Troop, the blue by Smithswinkel Bay Troop, and the purple at the northern Peninsula visited by the Constantia 2 Troop.

## 4.2 Q-methodology

Q methodology (hereafter Q) is a semiquantitative method to study subjective perceptions and views in a structured way by clustering the viewpoints into general social perspectives (Zabala et al., 2018; Watts & Stenner, 2012). The method represents the subjectivist epistemology since the meaning is attributed through interpretation of the statements presented to participants in a way that makes sense to them, determined by their individual experiences. Thus, there is no one objective "truth" but rather a plurality of realities that are shaped by each individual (Moon & Blackman, 2014). The method has been increasingly used in environmental management (e.g., Nelson et al., 2022), conservation interventions (e.g., West et al., 2016), and exploring values and motivation, for example, in forest conservation (Isyaku, 2021). Several features of Q make it especially suitable for the context of this study. The rationales are presented below:

a) Human-baboon interactions in Cape Town are highly polarised and Q is especially suited to highlight the complexities and diversities within such a context (Watts & Stenner, 2005).
b) Q is a participatory method as it accommodates participants' contributions at different stages of the process (statement selection, Q-sorting exercise, and data analysis). This approach can be especially powerful when engaging with communities that are directly affected by the problem.
c) The Q-sorting exercise creates a reflexive space for participants by requiring them to engage with the statements holistically, i.e., by looking at the statements in relation to one another. At the same time, participants need to make choices, thus reflecting on their priorities while being exposed to a diversity of arguments "out there" represented by the statements. This can be a useful exercise to foster understanding of the "other side" of the debate.
d) Q not only "forces" reflexivity on the part of the participant but also the researcher by applying the same holistic approach, this time to data analysis. The combination of qualitative and quantitative data facilitates nuanced insights into people's subjective perceptions (Watt & Stenner, 2012)

## 4.3 Q-set Design and Content

### 4.3.1 Gathering the Concourse

The first step in a Q-study is a collection of the *concourse* i.e., a comprehensive pool of statements about the topic of interest (Watts & Stenner, 2005). First, desktop research was conducted to identify relevant sources (e.g., academic, and grey literature, social media posts, policy documents, radio podcasts) from which the statements could be derived. The academic sources were identified through e.g., Google Scholar by using relevant keywords or by reviewing publications from local researchers working on the topic and snowballing. The grey sources were identified through a Google search. For critical reflection on the data sources, see Appendix A. Second, semi-structured interviews were conducted with residents of baboon-visited areas, members of the NCC team, as well as baboon researchers. Statements from the informal discussion with the NCC rangers during the participatory observations were also included in the concourse development. The inclusion of different sources and the involvement of various actors is crucial at this stage, as it allows to reach the statements' diversity that is representative of the current debate (Watts & Stenner, 2005). The participatory observation

also helped verify the representativeness of the concourse. The list of attended events and description of activities can be found in Appendix B. The concourse included 560 statements, at which point adding more statements did not supplement new opinions, i.e., it reached the *saturation point* (Eden et al., 2005).

### 4.3.2 Sampling Statements

The concourse was reduced to a *Q-set* which included statements that covered the topic of interest. Those statements were later ranked by participants during the Q-sorting exercise. The *structured approach* was adopted to develop the final Q-set. This approach aims to organise the topic into themes. From these themes, a certain number of statements were selected (Watts & Stenner, 2005). In this study, descriptive and open coding was used during the first round. The second round used focused coding to infer emerging categories (Charmaz, 2006). The list of final codes alongside respective statements that formed the Q-set together with the considerations for statement choice can be found in Appendix C. For the pilot study, 64 statements were selected.

## 4.4 Pilot

The pilot included 15 participants over the course of two weeks. The pilot participants were residents from various baboon-visited areas, conservation researchers and managers, baboon- and animal welfare activists. They were identified with the help of NCC (with consent), by engaging with various media during concourse development, and the participatory observations. The pilot aimed to test the clarity and feasibility of the process and assess the quality and representativeness of the Q-set. Based on the feedback some of the statements were removed, replaced, or rephrased. The final Q-set included 54 statements which is consistent with the suggested standard of between 40 and 80 statements (Watts & Stenner, 2005).

## 4.5 Participants Selection

Q does not aim for statistical representativeness, therefore, does not require probability sampling methods. In Q, participants are strategically selected based on the views they hold, specific knowledge about the topic, or other relevant criteria (Watts & Stenner, 2005; Webler et al., 2009). The inclusion criteria for the present study were as follows:

- Participants live, work (or both) in baboon-visited areas of interest.
- Participants are affected by at least one of the following troops: Slangkop, Da Gama, Waterfall, Smitswinkel Bay, Constantia 2.

Initial contact details to potential participants were provided by NCC (with consent) from where the *snowballing method* was applied. This method uses the existing network of participants for further recruitment. To ensure the desired level of diversity, participants were asked to provide recommendations of someone who holds a different opinion than them or altogether a unique view. A total of 26 participants were included in the study, following the suggestion of a maximum of 2:1 statement-participant ratio (Webler et al., 2009).

## 4.6 Data Collection

The Q-sorts were collected during audio-recorded in-person meetings, at the location preferred by participants in November and December 2021. Each meeting started with an explanation of the research aims, followed by the completion of the consent form and a short demographic survey (see Appendix D). Next, participants were presented with 54 statements and were asked to sort the statements from +5 (most agree) to -5 (most disagree) (see Appendix E for the full sorting instruction) on *the quasi-normal* Q-grid (see Figure 7). This type of symmetrical, forced distribution has an advantage as it facilitates the ranking process for participants and the interpretation process for the researcher (Watts & Stenner, 2005; Webler et al., 2009). Once participants completed the Q-sort they were asked to explain the reasoning behind the final ranking during the post-sorting interview. The questions were focused on the statements that were placed on the extreme ends of the distribution, followed by statements that participants changed or expressed some concerns about, and excessive meaning statements i.e., statements that were particularly open for interpretation. The whole process took about 60 to 90 minutes with few cases taking longer than that.

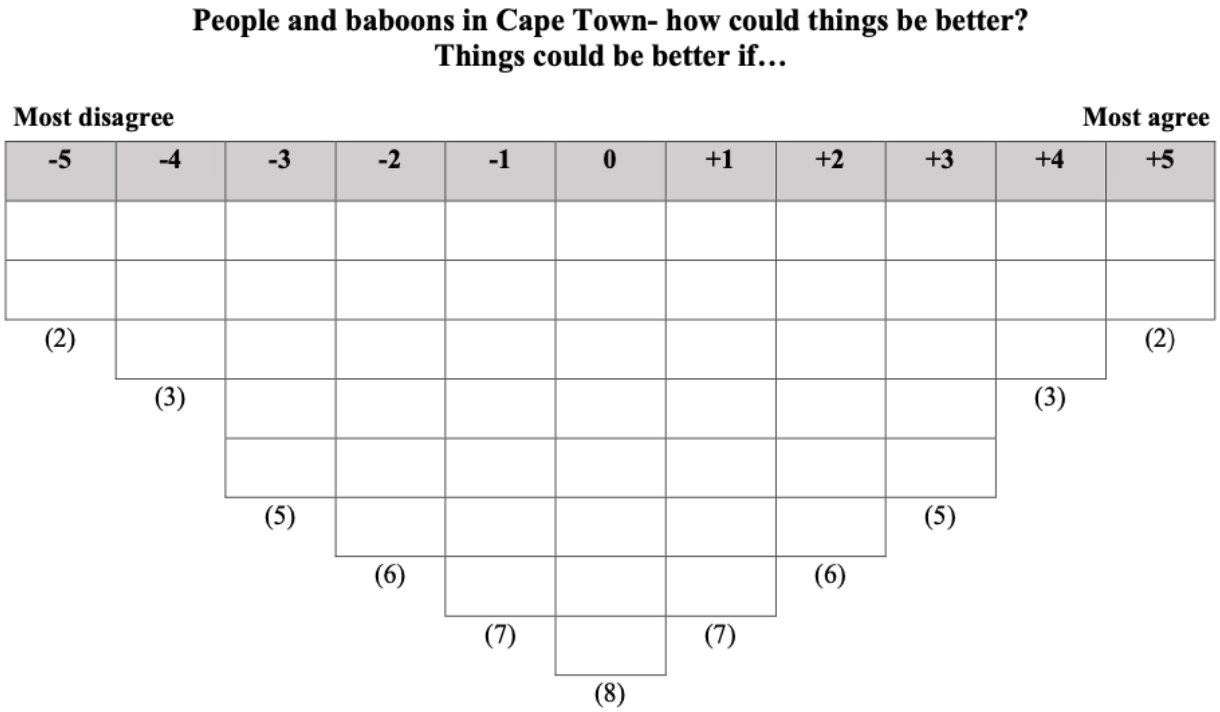


*Figure 7.* The quasi-normal Q-grid that participants used during the Q-sorting exercise. The numbers at the top indicate the rating and the numbers in the brackets signal how many statements can be selected for each rating.

## 4.7 Factor Analysis and Interpretation

### 4.7.1 From Q-sorts to Factors

The factor analysis aims to reduce participants' individual viewpoints collected in the form of Q-sorts into *factors* i.e., the clusters of shared perspectives. The collected Q-sorts were analysed with KenQ Analysis Desktop Edition (KADE) version 1.2.1 (Banasick, 2019). KADE correlates the Q-sorting with one another, resulting in a correlation matrix. Similar Q-sorts were identified by a *principal component analysis* which aims to find the mathematically best solution for the data (Watts & Stenner, 2005). Next, the *varimax rotation* was applied to find the factor solution that explains the maximum variability in a study (Watts & Stenner, 2005). The goal was to find a solution that would be clear, distinct, and stable. The final factors were selected based on the quantitative and qualitative criteria.

On the quantitative side, unrotated factors were accepted if: a) at least two Q-sorts loaded significantly on just one factor i.e., exceeded a factor loading +/- 0.35, based on the following equation: $2.58/\sqrt{N}$, where N represents the number of statements in the Q-set (Watts & Stenner 2012). For this study, N = 54; b) its eigenvalue (EV) was equal to or greater than

one; c) the cross-product of the two highest, absolute loadings within a factor exceeded twice the standard error; and d) satisfied the criteria of *parallel analysis* (Brown, 1993; Watts & Stenner 2012). The parallel analysis demonstrates the chance that the factors represent random patterns in the dataset (Watts & Stenner 2012; see Appendix F). On the qualitative side, factors had internal coherence, were illustrative of and relevant to existing discourse, and represented a distinctive perspective. Based on the above criteria a two-factor solution was selected.

### 4.7.2 From Factors to Factor Arrays

In the next step, *factor arrays* were created from weighted averages of participants' Q-sorts that loaded significantly and exclusively onto that factor. Two Q-sorts loaded significantly on both factors; however, each was negatively correlated with Factor 1 but positively associated with Factor 2. Since both Q-sorts aligned qualitatively with Factor 2, they were incorporated into the Factor 2 array. Consequently, two hypothetical Q-sorts illustrating the perspective of specific factors were generated. For the full list of factor loadings see Appendix G.

### 4.7.3 From Factor Arrays to Factor Interpretation

The factor interpretation followed the "crib sheet" technique recommended by Watts and Stenner (2012). This technique is a data-driven approach that allows for a qualitative, systematic interpretation of data. The creation of the crib sheet includes analysing each statement concerning its rating and meaning. This was done for both factors (see Appendix H). At this stage, the qualitative data from the post-sorting interviews was used to ensure that the meanings of the statements constructed by participants were captured. Next, factor interpretation in the form of the narrative was created. At this stage, participants were invited to provide feedback and suggestions but also state to what extent the narrative represents their perspective. Twelve respondents provided feedback which was used to improve the final narratives (67% response rate for Factor 1 and 50% for Factor 2).

## 4.8 Assessing Value Types Distribution

To understand how the value types are distributed within and between factors, each statement in the Q-set was evaluated based on the prototypical reasoning of a person who would agree with the given statement. First, the representative value was evaluated (e.g., dominance, justice) and then the respective value type based on Schwartz's (2006) typology. For example, statement 25 "...if baboons would again become afraid of humans." came from a source where the expression of human dominance over baboons was clearly indicated. During the pilot and

post-sorting interviews, this was reinforced as participants who generally agreed with this statement reflected on fear as a tool that helps control baboons. Dominance and control are values associated with a power value type; consequently, statement 25 was coded as power. To map the distribution of value types within each factor, the Q-grid was used. For limitations of this approach see Appendix A.

# 5. Results

A total of 26 participants completed a Q-sort, including 16 females and 10 males (for full demographics, see Appendix I) out of which 20 loaded significantly on one of the factors. All the participants lived and/or worked in various baboon-visited areas with the majority residing for more than 15 years. As a result of the analysis, two main viewpoints emerged. Below, each factor is presented in a form of a factor array and then a narrative. The two factors describe different perceptions of human-baboon interactions. These narratives do not represent an actual participant but are an aggregation of various subjective perspectives and meanings that participants expressed while producing their Q-sort. The statements with the corresponding ratings for each factor array are presented in Figures 8 and 9. The statements highlighted in blue are consensus statements that can be considered a point of a broader agreement between the factors. The summary of factors' characteristics is presented in Table 2.

Factor 1

| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| ** ◀ 51 …if people who have actually experienced the tyranny of | ** ◀ 26 …if we would accept that people can't live side by side with | ** ◀ 47 …if baboons would return to the areas where they do 'belong'- this | ** ▶ 53 …if the use of paintball markers on baboons would be stopped | 17 …if people would realise that rangers and those running the | 35 …if residents could understand that the rangers have a strategy | ** ▶ 46 …if there would be a balance between encouraging community | ** ▶ 6 …if euthanasia would be used more sparingly and only as a | ** ◀ 29 …if the decision-makers would rely on the advice from professionals, | * ▶ 3 …if we would adjust the baboon management strategy to the | ** ▶ 33 …if authorities would provide baboon-proof bins to all |
| 5 …if people could kill as many baboons as they wish to protect their | 27 …if baboons would only allow people to live their lives how they | ** ◀ 25 …if baboons would again become afraid of humans. | 30 …if both humans and animals could adapt and change their | 11 …if the baboon management programme would be run without | ** ▶ 42 …if conservation managers would be trained to deal with | ** ▶ 8 …if people would realise that controlling baboons with | 23 …if an official ethics review would be done to assess possible | ** ▶ 50 …if we would accept that society and nature are connected, | ** ▶ 18 …if authorities would stop treating baboons like | ** ▶ 7 …if urban baboon policy would pay more attention to how people's |
| | 36 …if we would treat baboons for what they really are- pests and | ** ◀ 43 ...if the baboon management programme would focus more on | ** ◀ 54 …if we would transition to baboon-proof fences in the baboon-affected | 39 …if people would recognise what the current measure of baboon | ** ▶ 40 …if residents could democratically elect a representative | ** ▶ 38 …if community attitudes and perceptions toward baboons | ** ▶ 2 …if people had a chance to learn more about baboons' value for local | ** ▶ 13 …if we would pay more attention to the actual well-being of | ** ▶ 49 …if residents would feel more civic duty to help minimise | |
| | | ** ◀ 37 …if we would talk more about how humans suffer injuries and costs due | ** ◀ 19 …If people would be more realistic and abandon ideas like "baboons | 24 …if a single authority was in charge of all baboon-related | ** ▶ 9 …if low-income households would get financial | ** ◀ 34 …If people would stop feeding and habituating baboons to | ** ▶ 44 …if there would be campaigns to make people more tolerant | 4 …if conflict resolution around baboons would be a collaborative | | |
| | | ** ◀ 20 …if sterilization and contraception would be used | ** ◀ 28 …if the emotional baboon huggers would stop lobbying for | ** ◀ 41 …if we could make it more attractive for the dominant baboon to stay | ** ▶ 15 …if authorities would work harder to gain public support | 12 …if we would accept that there is no perfect approach to | ** ▶ 10 …if we would rethink the way we communicate about the baboons so it | ** ▶ 21 …if the management programme would focus on the human and | | |
| | | | 14 …if the authorities would compensate residents for | ** ◀ 1 ... if baboons would be kept away from urban areas. | 52 …if the people in charge would do their job instead of | 32 …if an independent organization would monitor the efficiency | ** ▶ 16 …if people would be proud of having baboons as their | | | |
| | | | | ** ◀ 22 …If we would recognise that one can have mixed feelings about baboons: | ** ▶ 45 ...if people would understand and respect baboons for their | 48 …if we could focus on underlying, long-running issues and | | | | |
| | | | | | 31 …if we could build a more intelligent relationship with baboons | | | | | |

*Figure 8*. Factor 1's Array. Consensus statements indicated in blue are non-significant at $p<0.01$ and statement number 3 indicated by (*) is also non-significant at $p<0.05$. All other statements (marked by **) differ significantly at $p<0.01$. Statements marked with ▶ were rated higher than in the other factor and the ones marked with ◀ were lower. For a list of unshorten statements, see Appendix J.

Factor 2

| -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| ** ◀ 53 …if the use of paintball markers on baboons would be stopped | ** ▶ 51 …if people who have actually experienced the tyranny of | ** ◀ 40 …if residents could democratically elect a representative | ** ◀ 15 …if authorities would work harder to gain public support | ** ◀ 2 …if people had a chance to learn more about baboons' value for local | 48 …if we could focus on underlying, long-running issues and | 52 …if the people in charge would do their job instead of | * ◀ 3 …if we would adjust the baboon management strategy to the | ** ▶ 20 …if sterilization and contraception would be used | ** ▶ 29 …if the decision-makers would rely on the advice from professionals, | ** ▶ 1 … if baboons would be kept away from urban areas. |
| 5 …if people could kill as many baboons as they wish to protect their | 27 …if baboons would only allow people to live their lives how they | ** ◀ 8 …if people would realise that controlling baboons with | ** ◀ 46 …if there would be a balance between encouraging community | ** ◀ 7 …if urban baboon policy would pay more attention to how people's | ** ◀ 6 …if euthanasia would be used more sparingly and only as a | ** ◀ 49 …if residents would feel more civic duty to help minimise | ** ▶ 28 …if the emotional baboon huggers would stop lobbying for | ** ▶ 41 …if we could make it more attractive for the dominant baboon to stay | ** ▶ 19 …if people would be more realistic and abandon ideas like "baboons | ** ▶ 34 …if people would stop feeding and habituating baboons to |
| | 36 …if we would treat baboons for what they really are- pests and | ** ◀ 18 …if authorities would stop treating baboons like | ** ◀ 45 ...if people would understand and respect baboons for their | ** ◀ 42 …if conservation managers would be trained to deal with | ** ▶ 37 …if we would talk more about how humans suffer injuries and costs due | 12 …if we would accept that there is no perfect approach to | 4 …if conflict resolution around baboons would be a collaborative | ** ▶ 22 …if we would recognise that one can have mixed feelings about baboons: | ** ▶ 47 …if baboons would return to the areas where they do 'belong'- this | |
| | | ** ◀ 44 …if there would be campaigns to make people more tolerant | 14 …if the authorities would compensate residents for | 11 …if the baboon management programme would be run without | 39 …if people would recognise what the current measure of baboon | 17 …if people would realise that rangers and those running the | 35 …if residents could understand that the rangers have a strategy | ** ▶ 54 …if we would transition to baboon-proof fences in the baboon-affected | | |
| | | ** ◀ 50 …if we would accept that society and nature are connected, | ** ▶ 26 …if we would accept that people can't live side by side with | 24 …if a single authority was in charge of all baboon-related | ** ◀ 13 …if we would pay more attention to the actual well-being of | ** ◀ 33 …if authorities would provide baboon-proof bins to all | ** ▶ 43 …if the baboon management programme would focus more on | ** ▶ 25 …if baboons would again become afraid of humans. | | |
| | | | ** ◀ 16 …if people would be proud of having baboons as their | ** ◀ 9 …if low-income households would get financial | ** ◀ 38 …if community attitudes and perceptions toward baboons | 32 …if an independent organization would monitor the efficiency | 23 …if an official ethics review would be done to assess possible | | | |
| | | | | ** ◀ 10 …if we would rethink the way we communicate about the baboons so it | 31 …if we could build a more intelligent relationship with baboons | ** ◀ 21 …if the management programme would focus on the human and | | | | |
| | | | | | 30 …if both humans and animals could adapt and change their | | | | | |

*Figure 9.* Factor 2's Array. Consensus statements indicated in blue are non-significant at $p<0.01$ and statement number 3 indicated by (*) is also non-significant at $p<0.05$. All other statements (marked by **) differ significantly at $p<0.01$. Statements marked with ▶ were rated higher than in the other factor and the ones marked with ◀ were lower. For a list of unshorten statements, see Appendix J.

Table 2

*Summary of Key Factors' Characteristics*

| Factor's name | Loading Q sorts | % Variance explained | Gender | Background | Activism |
|---|---|---|---|---|---|
| Learning to Live with Baboons | 12 | 38 | 8 F, 4 M | Art, marketing, gastronomy | 3 Y, 3N, 6 DN* |
| **Top 2 rankings**<br>Things would be better if urban baboon policy would pay more attention to how people's behaviour impacts baboon behaviour.<br><br>Things would be better if authorities would provide baboon-proof bins to all baboon-affected residents- this is one of the easiest solutions to human-baboon conflict. | | | | | |
| | | | | | |
| Learning to Effectively Control and Manage Baboons | 8 | 15 | 3 F, 5 M | Business, natural science, applied science | 0 Y, 6N, 2 DN** |
| **Top 2 rankings**<br>Things would be better if baboons would be kept away from urban areas.<br><br>Things would be better if people would stop feeding and habituating baboons to human food and the environment. | | | | | |

*Note*: (*) Some of the participants that chose the answer "I do not know" (DN), instead called themselves "pro-baboon", "proactive citizens", or "baboon enthusiasts". (**) one person called her/himself "baboon conservationist".

## 5.1 Factor 1 Interpretation: Learning to Live with Baboons

Baboons belong here in Cape Town, and we must share this space with them (47: -3; 19: -2;)[1]. We are lucky to live in a beautiful natural area amongst baboons (A1, 8, 9, 10, 11, 15, 20) and we should be proud of having them around (16: +2). But to be proud of something we need to understand it (A2, 9, 19, 20). This is why people should spend more time with baboons — observe and experience them — so they can appreciate their value (2: +2). We also need active campaigns that would make people more tolerant and enthusiastic about baboons (44: +2). People can live side by side with baboons (26: -4) but we first need to accept that society and nature are connected, instead of trying to separate them (50: +3).

However, right now the problem is that authorities treat baboons as criminals (18: +4) instead of paying attention to how our behaviour impacts baboons' behaviour (7: +5). We are the problem, not them (A8, 9, 10, 11, 15, 17, 20). This is why management cannot only focus on baboons, it also needs to include people (21: +3). The most important thing that we can do is to improve waste management, by using our baboon-proof bins correctly (33: +5). Yet, the overall solutions need to pay more attention to the well-being of baboons and people alike (13: +3). We cannot just remove baboons that we consider to be "a problem" (43: -3) or play God by sterilising baboons or using contraceptives (20: -3). If we must use paintballs, we should do it mindfully (53: -2) and recognize that paintballs might not be successful if other things still make the urban areas attractive to baboons (8: +1). Euthanasia should not be part of the management guidelines (A8, 11, 15, 20). It should only be used as a last resort (6: +2).

> *If we are talking about euthanasia as part of a protocol and behaviour issues, then it is not euthanasia - then it's execution. Because euthanasia by definition is when there is suffering that cannot be ended. In the case of a healthy baboon like Philemon, it is not euthanasia. It's execution.* (A11)

Efforts to make baboons more afraid of humans are the wrong approach (25: -3). Constantly speaking of damages and injuries caused by baboons is not a solution (37: -3). We should not use fear-based language when we speak about baboons (A8, 11, 20). Instead, we have to rethink

[1] The supportive evidence from the Q-sorts is presented as numbers in the brackets (e.g., 47: -3, where 47 refers to the statement number and -3 to the corresponding rating. The evidence from interview data is indicated by participant numbers (e.g., A1). Participants associated with Factor 1 are coded with A and Factor 2 are coded with B.

the way we communicate about them (10: +2). They are part of our natural and cultural heritage (A8, 19, 20), so we should feel more civic duty to help minimize the negative human-baboon interactions (49: +4).

This is our responsibility if we want to live amongst the wildlife (A8, 9, 10, 20). Baboons cannot speak for themselves (A15, 20), so we need baboon activists (28: -2), to do it for them.

*Humans are the ones in power, we are the ones to decide about everything, so we need to also give a voice to baboons.* (A15)

## 5.2 Factor 2 Interpretation: Learning to Effectively Control and Manage Baboons

We cannot tell ourselves that humans and baboons can coexist peacefully — it is better for both to exist in distinct areas, separated by a physical boundary (50: -3, B14, 25). That boundary should keep baboons away from urban areas (1: +5), and in the natural areas where they belong (47: +4). Even if baboons did occupy the current urban areas first, the reality is that this space is now occupied by humans (19: +4) and this is not going to change (B14, 16, 22, 25). So, we need to stop feeding and habituating baboons to human food and the environment (34: +5) otherwise they are not afraid of us anymore (25: +3). Besides, it is difficult to be proud of the baboons (16: -2) and have respect for their species (45: -2) when they are foraging in our garbage and destroying human infrastructure (B14, 16, 25).

*They have developed a total disregard for humans. They are not afraid at all of the humans, of coming into your space, getting into your house, taking your food, walking up to children and adults, and ripping food away from them. That is a problem for me. So, we need to think about how we can re-introduce that caution, so they are not coming into an area where humans are. That would help with the natural separation.* (B22)

People often have mixed feelings about baboons (22: +3) and campaigns that would make people more tolerant and enthusiastic about baboons are not the key solution (44: -3). An integral part of restoring our relationship with baboons is to continue using paintballs (53: -5). Paintballs are an essential control mechanism even in an environment full of human food that attracts baboons (8: -3). Also, we must transition to the use of baboon-proof fences (54: +3) and we need to start controlling the baboon population by means of contraception and

sterilisation (20: +3). Other strategies could include trying to keep the dominant males away from the urban environment (41: +3) because they have a big influence on the troop activity (P16, 18, 22), or the removal of problematic baboons from the troop (43: +2). Once we have a smaller, sustainable baboon population (B14, 18, 22, 25), euthanasia could be used more sparingly (6: 0):

> *The problem with euthanasia is that people attach to baboons too much. Like with Kataza. People saw that baboon and gave him a name which is the wrong thing to do. They emphasised and sympathised with it. […] You have to manage the population as a population, so you don't look at that specific baboon. […] It comes back to research. Euthanasia definitely has its place, but only as a last resort. And when everything else fails. Without contraception — with too many baboons — they will be forced to euthanize. And yes, I understand people are going to be very upset about that but as a management tool, it has its place.* (B14)

Following the baboon management guidelines does not imply the criminalization of baboons (18: -3), it is evidence-based decision making (29: +4). This should be our priority, not emotional baboon lobbyism (28: +2) or residents' participation in baboon-related decision-making (40: -3; 46: -2).

## 5.3 Value Type Distribution Within Each Factor

The two factors' Q-grids differ substantially concerning their value type distribution but are not in complete opposition (see Figure 10). Factor 1's distribution is more uniform with universalism and benevolence statements focused on the "agree" side and the rest mostly on the "disagree" side. Factor's 2 distribution is more variable with some security and power statements on each extreme of the distribution, but also in the middle. The pattern suggests more value consistency within Factor 1 in comparison to Factor 2.

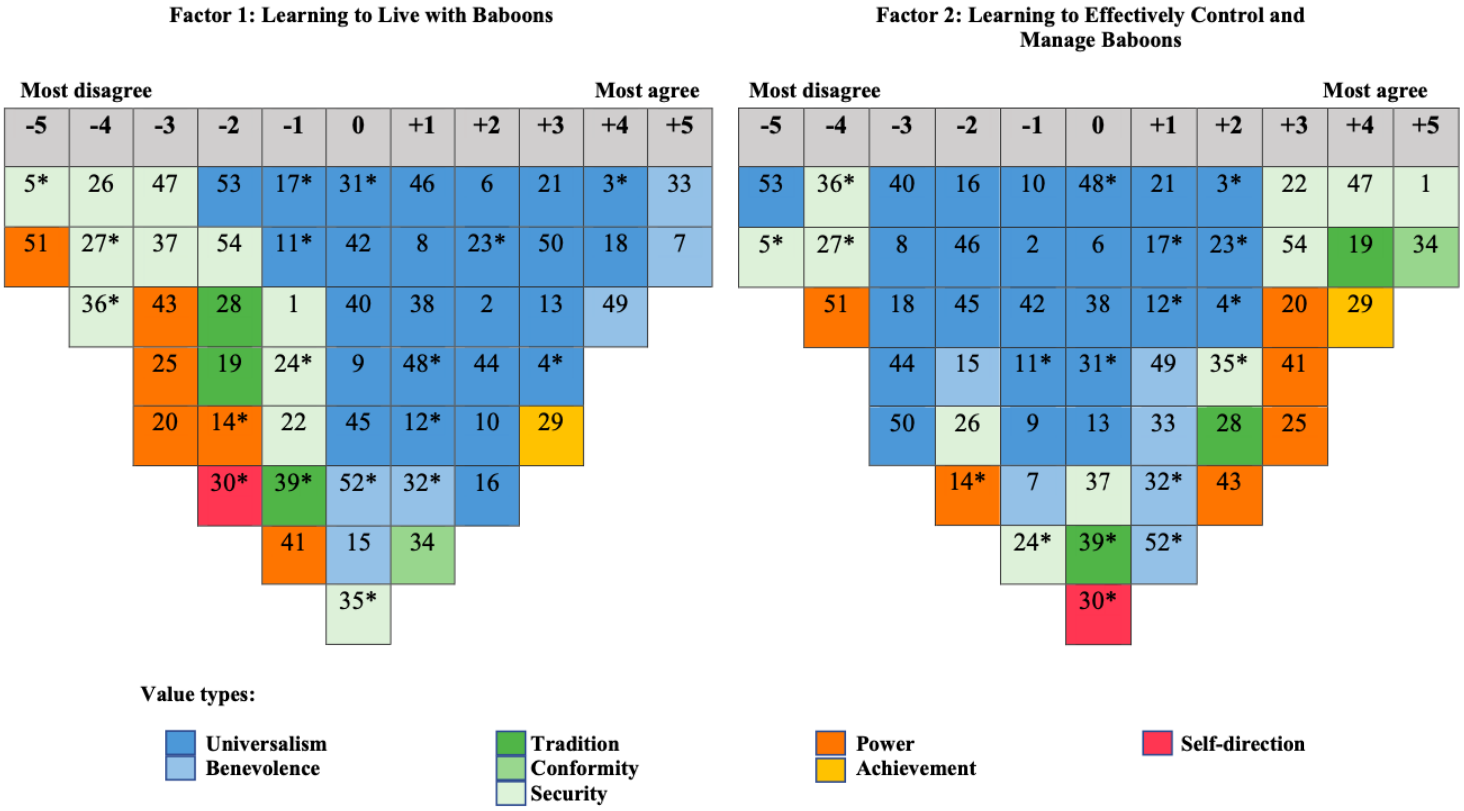


*Figure 10.* The value type distribution within each factor is visualised on the Q-grid. The numbers indicate specific statements, and the colour value types. The consensus statements are marked with an asterisk (*).

## 5.4 Consensus "Factor": Learning to Agree

The strength of Q is its ability to illustrate differences in opinions but also the points of convergence. Figure 8 and 9 highlights the consensus statements that were used to create a consensus narrative. This narrative can serve as an illustrative example of the similarities in perceptions between the two factors. The analysis of consensus statements is prevalent in Q-studies (e.g., Asah et al., 2012; Weitzman & Bailey, 2018), yet the presentation of that consensus in a form of narrative is rather novel.

The focus of the narrative is around the consensus statements with the most extreme ratings amongst all consensus statements, the least rating variability across participants, or the ones that appeared of value based on the qualitative information from the post-sorting interviews. Furthermore, the statements chosen for the interpretation were the ones with the comparable meaning given by participants. This is important to recognise because the statements can be considered consensual from the quantitative aspects but not as much once the meaning is taken into account. For example, statement 17 is a consensus statement but

because participants' assumptions about the level of rangers' care differed, it is hard to interpret what the consensus means for baboon management. Nevertheless, here an attempt was made to analyse the consensus statements to contribute productively to dialogue between the two factors. It is key to remember that as with the other factors, this narrative represents a hypothetical perspective, and not someone's personal opinion and because of the relational nature of Q, the narrative should not be viewed in isolation, but throughout the context of Factor 1 and Factor 2.

**Consensus "Factor" Interpretation**

Baboons are not pests or vermin (36[2]) and they are not trying to disrupt our lives intentionally (27). It is wrong for residents to kill baboons to protect their property or livelihood (5). We must adjust the baboon management strategy to the context rather than govern with a one-size-fits-all approach (3), however, we acknowledge that people value things differently and there is no perfect approach to baboon management (12). But there is a better way (A11) if we could only find collaborative conflict resolution processes (4).

*The only things that will resolve this issue are the people. Baboons will not resolve it. People must work to make things better. We need to find a way, starting by finding something that we can talk about and building that first dialogue between people.* (A24)

These collaborative processes could be easier to achieve if there would be one authority in charge of all baboon-related decisions (24), however, we do not think this is a feasible option (A10, B14, A17, B25). Baboon management does not need to be non-profit to be successful (11), but we do need more transparency in the decision-making process (A9, A17, B18) and monitoring (32).

[2] The number in the bracket indicates a particular statement the narrative is referring to (e.g., 36 referring to statement 36).

# 6. Discussion

This section will show how a different distribution of values shapes the polarity between the two narratives of the study. Taking a step back, the section will reflect on how values define our general preference for interactions with wildlife and how situations can influence these preferences. Lastly, the main points of convergence between the two factors will be explored, ultimately rejecting the dichotomous "love" and "hate" framings commonly used in the current public discourse.

## 6.1 Perceived Human-baboon Interactions and Underlying Values

This section describes how different value types and motivational concerns are distributed across the two factors, by analysing the emergent collection of subjective perceptions.

Factor 1's most important value type is universalism (VT-Universalism[3]). VT-Universalism is expressed in this factor by the appreciation of baboons as a cultural and ecological heritage of the region, as well as a key actor that nurtures the rich biodiversity with their role in seed dispersal. Factor 1 urges people to use positive language to foster tolerance toward baboons. This perspective recognizes baboons as wild animal but not necessarily as an animal that needs to be feared, which could be attributed to the relatively low importance of the VT-Security. In value theory, the relative importance of a certain value type is seen as a result of prior experiences (Schwartz, 1992, 1996, 2006). Indeed, participants associated with Factor 1 voiced predominantly positive or rather neutral experiences with baboons, which can explain the high importance of VT-Universalism and low VT-Security. Factor 1 understands the protection of baboons in terms of baboons' rights of being free to live their life without excessive human interference. In the literature, this type of narrative is attributed to values of equality and justice (Schwartz, 2006) driven by biocentric environmental concerns (Stern & Dietz, 1994) which are supported by the findings of this study. Contrary, Factor 2 places less importance on VT-Universalism. A good illustrative example of the difference in prioritisation between each factor can be seen in the reasoning around sterilisation and contraception. Factor 1's arguments focus on the ethics of humans' rights to decide for wildlife's reproduction. Factor 2 tends to avoid that ethical argument, instead, looking at these options as pure management tools that are essential to control the baboon population.

[3] This form will be used when referring to one of the value types categories, to help the reader identify the value type from values.

Factor 2 agrees mostly with VT-Tradition, VT-Conformity, VT-Security, and VT-Power statements. The literature describes VT-Tradition and VT-Conformity as motivationally related since they both aim to attain the goal of submission of self to norms, ideas, or others (Schwartz, 2006). Participants associated with Factor 2 express VT-Tradition through a strong commitment to the value of moderation and respect for social norms, manifested by avoidance of emotional attachment with individual baboons. This perspective emphasises the need for rational thinking, perceived by residents associated with Factor 2 as a norm, over emotions. Moreover, baboon activism is seen as a barrier that needs to be overcome before meaningful progress can take place. One of the participants explained:

*The City of Cape Town is trying to appease too many different people […]so then they have to put some quick fixes into place, to appease these people. This is a power struggle… and then they are all fighting and posting on social media that they are distancing themselves from each other. So, in the end, it becomes all about people instead of baboons or science.* (B25)

VT-Conformity expresses itself within Factor 2, with the expectations that residents will be able to restrain their need to help baboons when their help is not needed, for example by feeding baboons. These actions are seen by residents associated with Factor 2 as harmful to baboons and communities alike, which is in line with biocentric and altruistic environmental concerns. VT-Power centres around control and dominance, which reveals itself in the anthropocentric focus of the overall narrative and strategies that are focused on the separation of humans and baboons, which allow people to decide where and when they want to overlap with the baboons. Value theory explains this need for control as a way to maintain the accepted social order (Schwartz, 1992). The value of dominance can be seen in the idea that baboons should fear humans, reflecting the perception of human superiority over nature. The strong disagreement with baboons as cohabitants of urban space which should be exclusively human is also in line with the domination value. In contrast, Factor 1 places low importance on the VT-Power, expressed by concerns around the strategies that restrict baboons' freedom and interfere with baboons' life.

VT-Security is the least important to Factor 1. According to the value theory, the difference in importance of VT-Security between the two factors may be driven by the vision of what a safe and harmonious society is (Schwartz, 1992). For Factor 1 the society includes baboons and healthy ecosystems, so the accepted order of things is humans living peacefully amongst nature, representing a more relational view in line with the idea of human-wildlife

coexistence (Pooley, 2021). More anthropocentric views are held by Factor 2, where a stable society is hierarchical and baboons as animals are below humans in that hierarchy. Also, residents associated with Factor 2 appear to fear for personal and family safety more than those associated with Factor 1, which signals a higher level of threat perception, likely determined by their previous experiences and ideas about baboons. Past studies showed the importance of threat perception in human-baboon interactions, where higher threat perception is associated with more negative attitudes towards baboons, and perception of baboons as a problem (Mormile & Hill, 2017). The value theory highlights the reciprocal influence between value types, perceptions, and experiences (Schwartz, 2006). As such Factor 2's perception of safety as being compromised, along with threat perception likely contributes to Factor 2's higher priority of VT-Security, consequently affecting the ongoing experiences with baboons.

Both factors see competence as an important aspect of baboon management, however, the meaning behind it is different for each factor. For participants associated with Factor 2 competent baboon management follows evidence-based science that relays on experts' opinions and research (for an illustrative quote, see Figure 11). This is contrary to Factor 1's emphasis on the engagement with diverse knowledge systems, rangers, and community experiences in addition to research. Thus, Factor 1's competence value appears influenced by forward-thinking value within VT-Universalism (for an illustrative quote, see Figure 11), demonstrating how the configuration of value types — not a single value — can influence perceptions.

Overall, according to the value type two-dimensional typology (Rohan, 2000; Schwartz, 1992), Factor 1's value system is focused on the natural and social outcomes recognizing the agency of humans and baboons. This is in line with the strong biocentric environmental concerns where the focus is on humans and nature simultaneously. In contrast, Factor 2 distributes its attention between values that focus on organisation and individual outcomes. That perspective sees nature as something that can be ordered and controlled primarily for the benefit of self or community but also baboons. This reflects the mix of egoistic, altruistic, and in some situations also biocentric environmental concerns.


*Figure 11*. Quotes as the examples of different values within value types. Photos: K. Psiuk

## 6.2 How Value Types Underpin and Define People's Preferred Relationships with Wildlife

This section dissects the WVO to its underlying value types, to see not only what type of relationships people prefer but also why while acknowledging the value plurality within WVO. Furthermore, a person's WVO can shift depending on the context (Teel & Manfredo, 2010), thus the relation between situational dependencies and value types will be analysed using Factor 2 as an example.

The definition of mutualistic WVO fits well with Factor 1's strong focus on VT-Universalism which extends its motivational goal to humans and non-humans (Schwartz, 1992, 2006). Mutualists are unlikely to support management strategies that can hurt animals (Dietsch et al., 2017; Manfredo, 2008; Manfredo et al., 2017). For Factor 1, this stems from an appreciation of nature driven by VT-Universalism but also the value of responsibility within VT-Benevolence that manifests itself in the overall narrative of humans as a key agent responsible for the negative human-baboon interactions but also for the solutions. Value types form an integrated system of relations i.e., the value types that are mostly related to each other will form higher prioritisation (Schwartz, 1992, 2006). This "spillover" effect can be observed in the data, with VT-Universalism and VT-Benevolence as Factor 1's primary value types. As a result, Factor 1 attends to different situations by focusing on universalism- and benevolence-relevant aspects of the situation (Schwartz, 2006). Indeed, when Factor 1 respondents rated the study statements, their reasoning focused on aspects such as appreciation, harmony with nature, and responsibility.

Factor 2 shows some of the features related to the domination WVO, however, it is not at the extreme of the spectrum. According to WVO categorisation, Factor 2 would be considered pluralistic i.e., representing domination or mutualistic WVO depending on the situation (Dietsch et al., 2017; Teel & Manfredo, 2010). Limited evidence suggests that pluralists are similar to mutualists as they too consider wildlife in their decision making (Gigliotti & Sweikert, 2019), yet they display domination WVO by accepting practices that are based on human control (e.g., wildlife game-oriented practices; Gamborg et al., 2019). For example, for Factor 2 feeding and habituation of baboons should stop immediately. Residents associated with Factor 2 see these actions as harmful because they directly attract baboons to the environment with urban hazards (e.g., roads, dogs). The reasoning about baboons' safety was also used to motivate why baboons should return to their natural areas. Consequently, Factor 2 displays concern about baboons, but the value types guiding these concerns differ

from those of Factor 1. Still, Factor 2 expresses the need for human control for example by agreement with strategies such as sterilisation and contraception.

Overall, using value theory to analyse WVO brought new insights i.e., concerns over baboons' well-being are not exclusively reserved to specific value types but can be a result of different motivations. The value type distribution within each factor can also help predict responses to management efforts. According to the theory, a strong focus on one value type, as in the case of Factor 1, will likely result in value type-consistent responses. However, when the importance is distributed between several value types, as in the case of Factor 2, context can be an especially important determinant of the value type activation and consequently behaviour (Schwartz, 2006; Teel et al., 2010), making the responses less predictable.

## 6.3 Exploring Similarities Between the Two Factors

Up until this point, the focus was on the differences between the two factors found in the study. In this section, attention is drawn to the points of agreement between the factors to address the final research sub-question. Three main similarities will be analysed here a) language towards baboons b) context and value differences, and c) collaborative conflict resolution.

### 6.3.1 *NO* to Abusive Language

Both factors agree that speaking of baboons as pests and vermin is damaging to baboons as it "*dehumanises*" them i.e., denying human characteristics (Haslam, 2006). This cognitive process is primarily used towards other humans e.g., during mass violence (Haslam, 2006), yet some of the participants used that word when referring to baboons. The inclination to anthropomorphize baboons i.e., assigning human characteristics (Oxford Learner's Dictionaries, n.d.) may explain this tendency. Participants saw the abusive language as a way for people to disengage themselves from baboons, so that moral values and rules do not apply anymore, consequently, leading to increased chances of baboons' killings by frustrated residents. This was deemed unacceptable by participants associated with both factors.

### 6.3.2 Recognition of Context and Value Differences

Both factors recognise that each baboon-visited area is different when it comes to its landscape features, social-economic factors, and values. Thus, the agreement was that baboons cannot be managed with a one-size-fits-all approach. For example, rangers that are overseeing the Smithswinkel Bay and Slangkop Troop are facing extremely challenging topography that makes their task of "holding the line" between natural and urban areas difficult (see Figures 12

and 13). Contrary, in Simon's Town the main difficulty is poor waste management in the area (see Figure 14).

*Figure 12.* The challenging topography of the Murdock Valley. The red circle shows a baboon running down the hill towards the urban edge (yellow circle). The rangers are tasked with "holding the line" and preventing baboons from crossing into the urban areas by use of paintball markers. Only three rangers are managing approximately 42 baboons from the Smitswinkel Bay Troop. Photo: K. Psiuk.

*Figure 13.* The demanding landscape in which rangers responsible for Slangkop Troop operate. The red circle shows a baboon resting on the rock and the yellow circle, one of the rangers. The rangers need to climb up and down between the levels as they attempt to herd the baboons. Photo: J. Enqvist.

*Figure 14.* The challenge of waste management in Simon's Town. The brown bin in the picture is considered a "baboon–proof" bin, however, its lid is open, which means that baboons can access food easily. Photo: K. Psiuk.

According to some participants, social aspects are also important to consider i.e., cultural context that can impact the level of tolerance towards baboons. The value theory states that these factors shape our experiences and are reflected in our values (Schwartz, 2006). The recognition of differences is motivated by VT-Universalism and its focus on the interest of others (Rohan, 2000; Schwartz, 1992) including baboons, leading to participants' realisation that there is no one perfect solution. However, even though the recognition of individual value differences is there, the acceptance of those differences still poses challenges.

Overall, the participants perceive numerous ecological, social, and cultural distinctions between communities that are often accompanied by various levels of tolerance requiring different management approaches. Hence, there is a need to recognize, accept, and act upon value differences within and between communities with the aim of more inclusive baboon management.

### 6.3.3 Collaborative Conflict Resolution

Both factors see the development of collaborative processes for conflict resolution as important. However, there is less agreement on what these processes should look like and who should be involved. One challenge voiced with regards to building collaborative processes was the fact that only a fraction of the community is actively engaged, and it is difficult to involve the "silent majority". Furthermore, participants placed a strong emphasis on the need for a constructive process. There is a general understanding that collaboration needs to start from a higher level of governing authorities such as CapeNature, SANParks, and the City of Cape Town. Both factors see the complex web of actors in its current form as a barrier to successful baboon management. Participants associated with both factors acknowledge that it is time to put an end to the avoidance of responsibilities by the above-mentioned authorities, start enforcing laws, and form dialogue within and between communities, between communities and authorities, but most importantly between various authorities.

# 7. Implications for Baboon Management

Governance of complex SES such as the one presented in this study, requires an approach that will be iterative and adaptive (Folke et al., 2005). This means that governing authorities not only need to monitor their management efforts but also evaluate them against the values and visions held by residents. The fact that the main aim of the UBP remained the same since its beginning, despite controversies around it, signals that this evaluative component may be lacking. However, evaluation is difficult to achieve without *reflexivity* i.e., the ability to **recognise** own impacts on SES, **rethink** own values and practices, and **respond** accordingly (Pickering, 2019). The outcomes of this study will aid authorities, as well as the service providers, NGOs, and interest groups in evaluating the direction of the management efforts. For example, results revealed two contested management strategies: sterilisation and contraception, and electric fencing. This means that the study helps to fulfil the recognition step within reflexivity by creating awareness around the existing tensions. From here, authorities can start, for instance, anticipating how the responses to these contested strategies may look like in the future and building their awareness about the potential impacts of these strategies on the system, including public debate. Equipped with the analysis of values, authorities can move on to the next step of rethinking their values, trying to envision the future with alternative approaches, and potentially fundamentally changing the processes and practices in the long term. Still, the outcomes of the reflexivity process can be used to mitigate existing tensions in the short-term, by reconfiguring the communication strategies in a way aligned with public values, to create more understanding and interest.

Recent calls for more inclusive conservation can also be observed amongst participants of the study. But as they expressed themselves the big question remains on how to reach that aim. Acknowledging the tensions inherent to inclusive approaches (Wyborn et al., 2021), the 3-step process of tension identification, softening, and reframing was recently proposed (Raymond et al., 2022). The application of Q can serve as an example of tension identification but also tension reframing through reflection that can produce concrete ideas, as presented in Table 3.

Table 3

*Ideas From Residents About Process Improvements for Better Human-baboon Management*

| Process | Improvement | Example quote |
|---|---|---|
| Inclusion | Community recognition | "To build an accepted policy framework, the important part is communication. You need to have people go around once a year and **interview people** [...]. And slowly, the policy will change, depending on the success or failure of your current policy. People's perceptions will change too. If you are keeping baboons out of the area, people will be happy here. If the baboons are coming in, people will be unhappy, and your policy must change accordingly." (A17) |
| | | "You **democratically choose** one person from the community. That person collectively with [rest of] the community voices all the positives and negatives [of the situation] and from there you decide on the priorities." (A19) |
| Resource allocation | Targeted | "Giving **more attention** to the communities that **feel the worst** about the baboons visiting their communities" (A17). |
| Conflict resolution | Mediated | "I think you need a **conflict manager to help mediate** that conflict between National Park, the City of Cape Town, and NGOs. This person does not need to be pro- or against but can get these actors to talk and find a common ground. […] We are all trying to handle the problem instead of coming together and actually solving it." (A17) |
| Law | Enforcement | "Now you have all those different authorities, and it is easy to avoid the responsibility by making it someone else's problem. […] but having one organization in charge would ultimately mean corruption, so that is not a solution either. What we need is for each of those authorities to **take the responsibility and start enforcing laws**." (B25) |

Next, space needs to be created to learn from these different perspectives where conflicting values can be discussed from an equal stand (Raymond et al., 2022). One of the study objectives was to recognise the value plurality, consequently trying to reposition existing dichotomies of "loving" or "hating" baboons. The narratives presented in this study illustrate that residents' perceptions are complex and not mutually exclusive. This creates an opportunity to reframe the problems and goals, reflect on the tensions, and support dialogue across scales (Raymond et al., 2022).

Inclusive governance of complex SES is not easy, and it requires multiple steps and groundwork. Therefore, here attention was drawn to the practice of reflexivity as one of the initial steps. Oftentimes, the authorities try to establish a certain management framework before meaningful participation takes place (Folke et al., 2005). Inclusive conservation calls for the engagement of actors across scales in the establishment of the inclusive processes, as well as subsequent participation in these processes (Raymond et al., 2022). Ultimately, authorities need to reflect upon the question if baboon management is “just” management of baboons, management of humans and baboons, or humans and baboons while involving people.

# 8. Discussion of Approach, its Limitations, and Future Research

The approach of this study was explorative which means that there were no hypotheses or predictions to be tested. This also means that the choice of theory followed from the data, rather than being determined beforehand. Consequently, some findings came as a surprise during data analysis. For example, once the factors were created, a gender component became apparent. Factor 1 is predominantly female, whereas Factor 2 was associated mostly with males. Indeed, Schwartz and Rubel (2005) showed that universalism and benevolence are more important to women, and power more important to men which are in line with the value distribution amongst the two factors of the study. However, gender was not the focus of this study and not enough information other than biological gender was collected to make a meaningful analysis. Nevertheless, with the discussion about a paradigm shift in conservation, future studies could use the intersectionality framework to investigate how gender identity interacts with other social and political identities (e.g., activism) and impacts value prioritisation, interactions with baboons, and perceptions of scientific legitimacy.

Participants recruited represented western beliefs and knowledge systems. Two participants mentioned alternative belief systems, but they did not indicate it as their belief but rather used it as an example. An effort has been made to recruit participants that could potentially have more traditional beliefs; however, this was not successful due to limited access to these communities and language limitations (see Appendix K for positionality statement). The theories that followed were aligned with the perceptions expressed by the participants of this study. The next step could be to explicitly focus on communities that represent traditional South African beliefs and conduct a similar type of Q-exercise with them to see how differences in beliefs manifest themselves in the understanding of and interactions with baboons. This would help in identifying culture-based tensions and building awareness of different ways of knowing that are scarcely represented in the current debate.

This study explored some of the similarities between the emergent perspectives, however, the focus was on aspects where the underlying meaning was understood comparably by different participants. Future research could build on this analysis by also exploring the points that appear to agree but may have different meanings to different people. The similarities can serve as a dialogue opener between interested actors in a form of a workshop (e.g., T-lab) where a safe space is created to think about these different visions and meanings, (re)frame

challenges, negotiate solutions, and build actors' capacities to deal with these challenges (Pereira et al., 2021). For full method reflection including limitations, see Appendix A.

# 9. Conclusions

Climate change, population growth, and increasing development of remaining wild corners of the world mean that human-wildlife interactions will affect vast numbers of people. Understanding what these interactions mean to the affected communities, why and how they are emerging is important for wildlife governance as it creates an opportunity to reframe problems and goals while considering different perspectives. This study identified two distinct visions for human-baboon interactions in urban areas that are shaped by different sets of values. These two perspectives — being qualitatively different — are not pure oppositions. They are a complex web of agreements and disagreements that helps us to reposition dichotomies by drawing attention to the plurality of values and their relational aspect. One can advocate for baboons' well-being out of appreciation for nature, others out of concerns for human and baboon safety. It does not necessarily mean that one "loves" baboons more than the other, it often means that their interactions with baboons stem from different experiences and motivations, guided by the values important to them.

With the public recognition of value differences and louder calls for inclusive conservation from some parts of the scientific community and public, governing authorities will find themselves in a position where "business as usual" may no longer be sufficient. Thus, it is important that the processes of inclusion are reflected upon and tools that can bridge the realities of affected communities are established. Q as a reflexive, participatory method demonstrated that it is possible to engage with residents in a meaningful way, producing a nuanced understanding of the problem, and potential solutions. Communities are in this case a generator of ideas and initiatives which can help improve baboon management practices. Yet, inclusivity does not necessarily mean implementing everything that is being proposed but recognizing and legitimising the knowledge and experiences those different ideas originated from. Conservation and wildlife governance can be controversial and as this study has shown, oftentimes there is no objective "truth" but the plurality of realities. This is where studying subjective perceptions can contribute to an already rich understanding of the ecological side, for better **human-baboon** management.

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# Appendices

## Appendix A: Critical Reflection on Data Sources and Methods

### Reflection on Data Sources

*Sources For the Concourse*

The sources determine how you as a researcher understand the debate. By engaging with limited types of sources, some important issues may not be exposed due to biases within the sources themselves. However, if the researcher is new to the topic like I was, one can question their own abilities to detect these biases. For that reason, I chose to use as many different sources as I could think of at this stage. Nevertheless, as I was collecting the statements I was always wondering if there are aspects that I did not include simply because I do not know about their existence. For example, when I started reviewing academic literature, I came across a variety of perspectives and I felt that I am covering the range of existing possibilities, yet, as I progressed, I realised that I am starting to see a lot of repetitions, thus the question arises: *Is that all or am I circulating within some academic bubble?* When that happened, I turned to the grey literature in search of new perspectives. These sometimes inspired me by providing new keywords that I could use again for academic searches. What appeared interesting to me was the realisation that public debate always mentions rangers while speaking of paintballing, however, I could not find any perspective from the rangers themselves. This was a clear signal to me that by engaging with only secondary sources I will not be able to access that unique rangers' perspective. This is when I made the decision that I need to spend time with rangers so I can learn more about their experiences and what they see as important. For the same reason, I also decided to engage with some residents and conduct scoping interviews before finalising the concourse collection.

*Participants*

Q does not aim for a statistically representative sample. It focuses on key actors that hold different opinions about the topic. However, this is precisely the challenge of recruitment: you never really know what opinion people hold until you speak with them unless you knew them before, or they are public figures that express their opinions in the media. In my case, I started

the participant recruitment by using contacts from the service provider that currently manages baboons (NCC). They were able to put me in contact with residents that are rather active in their communities and could tell me a little bit more about the opinions these specific residents hold based on their interactions with them. This was often accurate, but, when I started snowballing from the residents themselves, their recommendations tended to be less accurate. Oftentimes, I got a recommendation from someone who described a person in a certain way, but in reality, that person ended up having quite a different opinion. Sometimes people simply did not know what the other person's opinion was. In response to that, I also tried to recruit participants based on the observation of the social media channels that I was part of, targeting people that represented opinions I did not yet hear; however, the success rate of that recruitment strategy was lower.

**Reflection on the Q-Method**

*Gathering the Concourse*

There are two important aspects that I will reflect on here: representativeness and saturation. Some topics receive a lot of public attention such as euthanasia or paintballing, others are barely spoken about but are still important such as contraception. While collecting the concourse I needed to ask myself the question *Why* something is more or less spoken about and what does it tell me about the specific topic and the case in general. The frequency with which the topics are mentioned is not the sole determinant of their importance, so I had to also look at the context in which these topics are mentioned and at the responses they evoked in the debate. In that sense, Q is a method that requires a lot of commitment from the researcher and awareness, so that these important details are not overlooked.

At some point, the researcher needs to face another question: *When enough is enough? Do I have adequate material to start building the set of statements?* This is an important point in the Q study because the concourse creates a base from which the final statements will be selected. This is also the moment when I realised how dynamic the debate around baboons is. The topics that were “hot” when I started collecting my concourse, were partly replaced by new “hot” topics when I was about to finish. The fact that fundamental choices of selection must be made at the start of the study, could be seen as a limitation of Q in studying dynamic debates in real-time, however, this is also the advantage of Q: *the real-time.* As a participatory method, Q gives a researcher the possibility to engage with those dynamics during post-sorting

interviews. However, before I realised that, it felt a bit uncomfortable to decide that my concourse is ready, while the debate continued.

*Sampling Statements*

In my experience, the selection of statements that consequently will be presented to participants, is the hardest step. Many aspects need to be considered and this decision will strongly determine how the study will look moving forward and what type of insights will be obtained. In a complex issue such as this one, I felt a great responsibility to ensure that people holding different views can express themselves well with the statements that I presented to them. However, to do that, I first needed to understand what perspectives are out there. Four perspectives started to emerge as I was collecting my concourse, and as I moved to this step, I wrote a short "profile" for each of these heuristic perspectives. This helped me with the statement selection process, as I could ensure that statements are rather equally distributed amongst them. Still, the choices that are made at this stage are rather arbitrary and can be impacted by the researcher's own biases and blind spots (more on that in the *Overall reflection on Q).*

Another major consideration was if the statements that I've chosen are representing the issue well. This must be accompanied by feasibility concerns. Thus, the question is: *How do you cover a complex issue and make sure that different perspectives can express themselves but still use approximately 50 statements?* The answer is: *you need to make difficult choices (…again).* I made a conscious decision to exclude some of the aspects of the debate such as laws and translocation of baboons because I felt that these are very complicated and could easily be a topic for a full study. This means that my statements, consequently results do not include a full range of possibilities. However, I was prepared that these topics may come up in my conversations with participants and still could be reflected in the results. For example, the statements about responsibility sometimes prompted people to talk about law enforcement, and I decided to include that aspect as one of the process improvement suggestions from participants.

Some statements represented means i.e., tools that we can use to make human-baboon interactions better, and other ends i.e., the more aspirational end states. This was a conscious choice to mix these, as the aspirational aspects give insights into people's fundamental values and visions for human-baboon interactions, and the means can tell us something about the

pragmatics of getting to that aspirational vision. However, this mix made it harder for some participants to decide on their priorities during the Q-sorting exercise. This is because, the more aspirational the statement, the more it prompts the question of achievability in the reality of Cape Town. I tried to instruct participants not to think too much about the likelihood of certain things happening, but about what would make things better. Yet, I could see some of the more aspirational statements in the rather neutral zone, presumably for this reason. This is not a limitation of the method itself but could be seen as a limitation of this specific approach. In fact, Q gives a possibility to mitigate this since it creates that reflexive space for participants and researcher so that concerns could be (and were) expressed, and I could take them into account when interpreting the data. Since I ended up using value theory, this approach was vital in exposing the fundamental differences in perceptions, which is the key purpose of this study. However, to make the process easier for participants, it would be good to warn them that some of the statements may come across as unfeasible, but that should not stop them from giving them high ratings if they think that this is what it takes to improve the human-baboon interactions.

*Participant Selection*

At the start of the study, I had to determine who I wish to include. At first, I thought about engaging with various actors such as authorities, the service provider, NGOs, researchers, and residents, however as I progressed, I decided to only focus on residents. The decision was driven by consideration of feasibility, access, and recognition that residents seek to be heard.

The question of access was a major aspect to consider. To speak with higher-level authorities, I would have to obtain a research permit which can take time, and there is no guarantee that it will be granted. Considering the current state of the debate and the fact that I was collecting my data during the elections, it was unlikely that I would manage to get access to the relevant people. The current service provider is discouraged from any sort of public communication about the programme, thus including them in the data collection would also be difficult. The NGOs are often themselves affected by residents, so what remained were scientists and residents. I saw value in getting the scientists' perspective, but as I observed the public debates and residents' calls to be more included and listened to, I decided to prioritise the residents' perspective. Since I also had a limit on how many participants I could involve,

this decision opened a possibility to increase the number of baboon-visited areas that I could incorporate.

The next point is not strictly participant selection, but it is related. Q is primarily focused on subjective perceptions and meaning; thus, a lot of thought was given to the language of the study. The expression of meaning can be different in someone's first or second language. In a diverse context like Cape Town, this could be seen as a limiting factor. Of course, it is possible to create Q-sets in two different languages but then the question of interpretation and loss of meaning in translation becomes apparent. Since the baboon-visited areas, I focused on were predominantly English speaking or bilingual, I decided to conduct the study in English. However, my learning was that it is important to reflect on the linguistic alignment between participants and the researcher.

The Q method asks for deep engagement and commitment from participants. This commitment is not always easy to mobilise in a contested context. I have tried to engage and recruit people with the most extreme views about baboons' presence in urban areas, however, I did not succeed. I do not see this as a direct limitation of the method, but since Q is often used to study contested issues, it is almost an inherited challenge that researchers need to actively mitigate. One way to do that would be to make the study as appealing to different groups as possible, flexible, and less demanding. Also, people with extreme opinions may have reservations to share their opinions face-to-face in the fear of potential retribution. Thus, thinking of ways in which participants can remain fully anonymous (also to the researcher) but still give their insights could be a way to overcome this challenge.

*Data Collection*

The Q-sorting exercise including the interview was estimated to take between 60-90 minutes, sometimes taking more than that. It is a demanding task and people should be at their full mental capacity. However, my meetings were often scheduled in the late afternoons, especially for working participants, which can introduce a source of error due to tiredness. Sometimes participants can become overwhelmed by the exercise. In that case, it is good to check with participants if they wish to continue or simply stop or reschedule the exercise, since its validity may be compromised. In my case, none of the participants decided to stop the exercise, but several expressed that it was challenging.

I see Q as an opportunity to learn and reflect not only for researchers but also for participants. Many participants engaged deeply with the exercise consequently extending the time of the meetings (with the longest being approximately five hours). Since residents often feel unrecognised and their voices unheard, I did not want to cut these meetings short but rather embrace the situation and learn as much as I could. When I asked participants if they thought this was a useful exercise for them, most commented that it was a good way to learn more about the case by being exposed to different aspects and arguments at the same time. However, researchers may need to draw the line in what they think is still meaningful for both sides.

As I was often a guest at participants' homes, sometimes I entered a situation where more than one person was present. Q is a flexible method and can facilitate group or individual sorting exercises, but I was only prepared for individual sorting. An interesting dynamic can develop in such a situation because as a guest you need to respect people in their own homes, but as a researcher, you need to ensure that the data that you are collecting is reliable and valid. Thus, the line between the person sorting and the observer needs to be drawn. If that line becomes blurred and the person sorting becomes influenced by the observer, the data could be compromised, and consequently excluded. Indeed, I experienced this kind of dynamics and suspected that I will not be able to use one of the Q-sort in my final analysis. The Q-sort produced was consider confounded i.e., significantly associated with both factors, thus not used in the creation of final factors.

As with all self-reported methods, the question of social desirability, consequently validity of the study and Q as a method can be raised. Personally, I think the Q-sorting exercise is structured in a way that prevents participants from telling a story that is untrue or heavily adjusted. This is because participants need to engage with all the statements in a relational way, making it difficult for people to create a story on the spot that would be coherent if it does not align with their opinion. Since participants could also share in-depth reflections about their choices, I think the risk of socially desirable answers was minimal, however, there is a possibility that some of the individual statements — especially the ones with a strong wording — were rated lower than they normally would. Still, considering that the topic was personally important to participants I doubt that they would consciously manipulate their ratings.

*Factor Analysis and Interpretation*

There are many guidelines and rules when it comes to Q data analysis, yet almost all of them can be "bent" and defended. For someone who engages with the method for the first time, this creates a lot of uncertainty but also "forces" researchers to look beyond the numbers while focusing on the meaning. In my analysis, I decided to opt for the robust strategy by following the rules recommended by Watts and Stenner (2005). As a novice, I did not feel comfortable experimenting, for example with the manual rotations, at least not to the extent that I would do it for my final thesis (I did experiment as a learning process). To ensure that the logic of Q is applied, I also looked at the qualitative aspects when deciding on the number of factors. In the end, the solution brought fewer factors than I expected, but more would obscure the differences (and on top was not ideal from quantitative aspects).

*Discussion*

The tricky part about Q is moving from the perspectives of individual participants to the hypothetical emergent factors. It is a strange paradox because as a researcher you even warn the reader that the emergent perspectives are not individual opinions but collections of opinions, yet you as a researcher rely on the individual reflections in the analysis. Thus, while working on results and later discussion, it is important to constantly circulate between data from different participants and anchoring it in the theory.

Q generates extremely rich data, and I had to make a difficult decision as to what it is that I want to discuss. This was especially difficult when presenting the consensus between the factors. There are aspects that do not appear important from a quantitative side because of their low scores, but qualitatively they can be extremely interesting because they show how people's interpretation varies even when they appear to agree. Nevertheless, I decided to focus on statements that were interpreted in a similar way by the two factors. I perceive this approach as more useful in this context where differences between people abound and agreements are scarce.

*Overall reflection on Q*

Q is a great method, especially for researchers who want to move from quantitative methods to qualitative or are looking for a combination of both. But the ambiguity of rules can be a problem. There are a lot of decisions to be made at each step of the process and guidelines scarily give a specific answer. In the end, the researcher with all her/his blind spots and biases is the one who needs to make a final decision. Yet in the emotional and polarised context, it is easy to be pulled on one or the other side of the debate. Thus, Q with all its ambiguity requires researchers to actively build awareness of these biases. To deal with mine, I decided to keep a reflexive journal where I wrote about my work every day. This helped me to realise when and how my own emotions and perceptions affected my work. Building that awareness contributed to a better decision-making process.

In Q studies the target participants are usually knowledge holders, people who have the most extreme and diverse views or are in some way key to the topic. These actors are usually more visible in the public debate, but one can also argue that the "silent" actors that are not so visible, can also hold important knowledge and opinions. So, even though the purpose of Q is to expose those extreme, diverse views, the implicit assumption that "loud" is always the most extreme or diverse may have to be revisited. In hindsight, I think I could also benefit from interacting with the "silent" group, however, the challenge to overcome there is the identification and mobilisation of these actors.

**Assessing Value Type Distribution**

It is not easy to judge values in general, but it is even harder when that aspect was not explicitly asked to be reflected upon by participants. However, it is not always necessary for a person to explicitly name values if their reflections about the given topic are elaborative and in-depth. In my case, I realised that I do have a lot of input from the interview data, and I will be able to judge the values that certain statements were representing.

I based this assessment on the assumption of the Cognitive Hierarchy Model (Fulton et al., 1996) and its idea that attitudes, value orientations, and values are directly linked. This means that by knowing the attitudes (i.e., the rating of a specific statement), I can also know the extent to which a certain value is important to the person. To understand which value is represented in which statement, I thought of a prototypical person who would agree with the

given statement, coded the value a certain statement represented given that prototypical person, and subsequently coded the respective value type.

This approach has its limitations since it is possible that (diss)agreement with certain statements can be guided by different values and these alternative values will not be exposed with the prototypical approach that I took (just the extent certain values apply). However, this approach allowed me to compare the factors which was the primary aim. Furthermore, the theory helped to produce a coherent account of the value distribution and allowed for further speculations. The approach could be improved by statement validation, where participants would match the statements to the values that guided their reasoning. For a more deductive approach, the statement validation could be implemented during the pilot phase to improve the validity of the study, while not adding more load onto participants.

It is important to note, that participants used forced distribution i.e., they could only place a certain number of statements under a particular rating. The distribution of value types might have looked differently if participants would have full freedom to choose how many statements to place under each rating. Thus, the results should not be taken as an indication of the overall value system but as an indication in this specific context.

# Appendix B: List of Participatory Observations Events

| Number | Location | Date | Event |
|---|---|---|---|
| 1 | Da Gama Park | 20/10/21 | Field visit with the NCC rangers |
| 2 | Smitswinkel Bay | 20/10/21 | Field visit with the NCC rangers |
| 3 | Slangkop | 21/10/21 | Field visit with the NCC rangers |
| 4 | Simon's Town | 21/10/21 | Field visit with the NCC rangers |
| 5 | Tokai forest | 22/10/21 | Field visit with the NCC rangers |
| 6 | Constantia | 22/10/21 | Field visit with the NCC rangers |
| 7 | Tokai | 23/10/21 | "Save our baboons" public manifestation |
| 8 | Simon's Town | 07/11/21 | "Living with wildlife" community organized lecture |

The events 1-6 were arranged by the NCC team, so I can see how the rangers work looks like, observe baboon behaviour and their interactions amongst themselves as well as with people. During these visits, I had an opportunity to speak with the field managers and rangers. The NCC team members knew my role as a researcher and the purpose of the visit. My role shifted periodically from observational when I only watch them, took pictures, or recorded videos to more participatory where I conducted interviews or had informal conservations with them.

Notes taken during these events included:

- Time of the day and weather conditions
- Landscape features and physical surrounding
- Number of rangers
- Interactions: Human-human, human-baboon, baboon-baboon
- Herding strategies

Event 7 was a public manifestation organized by animal activists' groups. I started the observation by being "incognito" meaning that people did not know that I am there as a researcher. I first observed the event from the distance and took some pictures. As the event progressed, I approached the event organizers and introduced my role. I conducted an informal conversation with them during the event and after the event. I also used this opportunity to collect some contact details that were later used to recruit participants for the pilot study and final data collection.

Notes taken during these events included:

- Time of the day and weather conditions
- Location details
- Number of the event participants
- Interactions: Human-human
- Signage and banners

Event 8 was a lecture given by Dr Melvyn Greenberg who is a veterinarian who specialised in animal behaviour. The lecture was organized by the community members and due to Covid-19 was by invitation only, hosting about 30 people. The lecture focused on living amongst the wildlife, but the subject of baboons was a major topic. Topics such as habituation of baboons, education, and baboon-proofing were addressed. Questions from the audience included:

- What are the consequences of naming individual baboons?
- How could we involve community members more?
- What is the best way forward to resolve the problem?

The event was a great opportunity to get to know community members and collect contact information that was later used to recruit participants for the final data collection.

Notes taken during these events included:

- Time of the day and weather conditions
- Location details
- Number of the event participants
- Interactions: Human-human
- Key topics discussed
- Questions asked

Click here to return to section 4.3.1 Gathering the Concourse.

# Appendix C: The List of Codes and the Corresponding Statements that Formed the Q-set of the Study

During the coding process, four tentative social perspectives emerged, and they were used as a heuristic when choosing the statements and ensuring that each perspective had sufficient statements in each category to express their views. These four provisional perspectives were: "Pro-baboon management program", "Anti-baboon management program", "Anti-baboons", "New system". Several considerations were included when choosing the final statements: a) various perspectives were represented, b) each perspective could express a coherent story, and c) statements had *excessive meaning*. This means that participants can impose their own meaning onto the statement. In other words, the Q-method assumes that statements do not have a meaning until the participant reads them and gives them meaning (Watts & Stenner, 2005). An example of an excessive meaning statement is statement 47 where 'belong' can be defined very differently between participants.

| Code | Statement |
|---|---|
| Accountability | 1 ... if baboons would be kept away from urban areas.<br><br>14 …if the authorities would compensate residents for the damage caused by baboons.<br><br>18 …if authorities would stop treating baboons like criminals.<br><br>49 …if residents would feel more civic duty to help minimise negative human-baboon interactions.<br><br>52 …if the people in charge would do their job instead of avoiding responsibilities. |
| Education | 2 …if people had a chance to learn more about baboons' value for local biodiversity by experiencing and observing them.<br><br>42 …if conservation managers would be trained to deal with people, so they can handle arising conflicts better.<br><br>44 …if there would be campaigns to make people more tolerant and enthusiastic about baboons. |
| Governance | 3 …if we would adjust the baboon management strategy to the context rather than govern with a one-size-fits-all approach.<br><br>9 …if low-income households would get financial assistance to help baboon-proof their homes.<br>11 …if the baboon management programme would be run without profit- |

| | |
|---|---|
| | driven companies.<br><br>15 …if authorities would work harder to gain public support for the baboon management programme.<br><br>24 …if a single authority was in charge of all baboon-related issues. |
| Collaboration | 4 …if conflict resolution around baboons would be a collaborative process with disciplined arguments rather than competition over power and resources.<br><br>38 …if community attitudes and perceptions toward baboons would be considered before planning management strategies.<br><br>46 …if there would be a balance between encouraging community participation and baboon management according to the accepted policy framework. |
| Lethal strategies | 5 …if people could kill as many baboons as they wish to protect their property and livelihood.<br><br>6 …if euthanasia would be used more sparingly and only as a very last resort. |
| Human behaviour | 7 …if urban baboon policy would pay more attention to how people's behaviour impacts baboon behaviour.<br><br>34 …if people would stop feeding and habituating baboons to human food and the environment. |
| Deterrents | 8 …if people would realise that controlling baboons with paintball shots is not successful if what is in the city is attractive to baboons.<br><br>53 …if the use of paintball markers on baboons would be stopped immediately. |
| Communication | 10 …if we would rethink the way we communicate about the baboons so it is not only about risks and conflict.<br><br>37 …if we would talk more about how humans suffer injuries and costs due to baboon encounters. |
| Values | 12 …if we would accept that there is no perfect approach to baboon management - people value things differently.<br><br>19 …if people would be more realistic and abandon ideas like "baboons were here first so we must share our space with them".<br><br>50 …if we would accept that society and nature are connected, instead of trying to separate it by violently policing an imagined boundary. |
| Monitoring | 13 …if we would pay more attention to the actual well-being of baboons and people living near them, instead of numbers to measure the success of the baboon management. |

| | |
|---|---|
| | 32 …if an independent organization would monitor the efficiency of the baboon management programme.<br><br>39 …if people would recognise what the current measure of baboon management success is and judge the program accordingly. |
| Coexistence | 16 …if people would be proud of having baboons as their neighbours.<br><br>30 …if both humans and animals could adapt and change their behaviour, learn from experience, and pursue their interests. |
| Care | 17 …if people would realise that rangers and those running the baboon management programme actually care deeply about the baboons.<br><br>31 …if we could build a more intelligent relationship with baboons based on care and empathy. |
| Baboon management strategies | 20 …if sterilization and contraception would be used more, as a strategy to minimise the baboons' presence in urban areas.<br><br>21 …if the management programme would focus on the human and baboon side of the conflict together.<br><br>35 …if residents could understand that the rangers have a strategy for managing the baboons, and let them do it.<br><br>43 ...if the baboon management programme would focus more on removing "problem individuals" from baboon troops. |
| Plurality | 22 …if we would recognise that one can have mixed feelings about baboons: we can love baboons in their natural habitat, but hate them in our homes. |
| Transparency | 23 …if an official ethics review would be done to assess possible impacts of baboon management strategies on animal welfare.<br><br>40 …if residents could democratically elect a representative to participate in baboon-related decision-making. |
| Domination | 25 …if baboons would again become afraid of humans.<br><br>28 …if the emotional baboon huggers would stop lobbying for baboons.<br><br>36 …if we would treat baboons for what they really are- pests and vermin.<br><br>51 …if people who have actually experienced the tyranny of marauding baboons in their home would be the ones who get to decide what to do with them. |
| Anthropocentrism | 26 …if we would accept that people can't live side by side with baboons.<br><br>27 …if baboons would only allow people to live their lives how they |

| | |
|---|---|
| | want. |
| Evidence-based | 29 …if the decision-makers would rely on the advice from professionals, evidence-based research and field experience. |
| Baboon-proofing | 33 ...if authorities would provide baboon-proof bins to all baboon-affected residents- this is one of the easiest solutions to human-baboon conflict. |
| Baboon-behaviour | 41 …if we could make it more attractive for the dominant baboon to stay away from human environments, so the rest of the troop also stays away.<br><br>45 ...if people would understand and respect baboons for their agility, perseverance, patience, and willingness to try anything.<br><br>47 …if baboons would return to the areas where they do 'belong'- this is how we will solve the true conflict. |
| Human-human conflict | 48 …if we could focus on underlying, long-running issues and differences in values and power instead of rapid, technical fixes. |
| Fencing | 54 …if we would transition to baboon-proof fences in the baboon-affected areas. |

Click here to return to section 4.3.2 Sampling Statements.

# Appendix D: The Pre-sorting Survey

**Participant ID:**
**What is your age?**

- 18-25
- 26-33
- 34-41
- 42-49
- 50-57
- 58-65
- 66-73
- 74-81
- 82+

**What is your gender?**

- Female
- Male
- Non-binary
- Prefer not to say

**What is your highest level of education?**

- Primary education
- Secondary education
- Vocational secondary education
- Post-secondary education
- Tertiary education

**Which of the following do you MOST identify as your background?**

- Natural science
- Social science
- Interdisciplinary science
- Business
- Engineering
- Medicine
- Other……
- Not applicable

**What is your yearly income?**

- R 1-216 200
- R 216 201- 227 800
- R 337 801- 467 500
- R 467 501- 613 600
- R 613 601- 782 200
- R 782 201- 1 656 600
- R 1 656 601 and above
- Prefer not to say

**Which troop are you affected by? (Multiple answers possible)**

- Slangkop Troop (SK)

- Da Gama (DG)
- Waterfall (WF)
- Smitswinkel Troop (SWB)
- Plateau Road (PR)
- Groot Olifantsbos (GOB)
- Cape Town 1 (CT1)
- Cape Town 2 (CT2)
- Mountain Troop (MT)
- Tokai (TK)
- Zwaanswyk (ZW)

**Do you live or work in the baboon-affected area?**

- Live
- Work
- Both

**Which baboon-affected area do you live/ work?**

…….

**How long have you been living/ working in this area?**

…….

**Would you consider yourself a baboon activist?**

- Yes
- No
- I do not know

Any comment?

…….

**What baboon-related activities are you engaging in?**

…….

Click here to return to section 4.6 Data Collection.

# Appendix E: Q-sorting Instructions

In this study, I would like you to sort some statements that are a broad representation of the current debate around human-baboon interactions. I would like to understand your vision for better human-baboon interactions.

Here is a stack of cards with numbers on them. The numbers don't mean anything. Each card offers a different response to the research question. And here is an example of the distribution board that you will use to guide your sorting. The numbers at the top indicate to what degree you agree or disagree with each statement in relation to other statements.

First read through all the statements- one at a time- and then sort them into three piles. One that you feel positive about, agree with or feel that these statements are important. Position that pile on your right-hand side.
The second pile should contain statements that you feel negative about, disagree with, or are unimportant to you. Position that pile on your left-hand side.
The third pile should contain the statements that you feel indifferent about, you are unsure about, or that you feel both positive and negative about. Position that pile in front of you.

Then take the ‘agree’ pile on your right and begin to lay the cards on the right side of the distribution, starting from the statements that you strongly agree with (+5). Use the example distribution board to see how many cards can be placed at each ranking point. This is indicated by the number in the bracket. Work your way from the extreme right side (+5) towards the centre of the distribution until you position all the cards from the ‘agree’ pile.

Note that the rows don’t mean anything, so if you see 3 positions below +5, it doesn’t matter in which place you put the statement. All those rows will have a score of +5. So only the columns matter.

Then follow the same process with the “disagree” pile. Again, start with the highest priority statements at the extreme left and work your way towards the centre of the distribution.
Once you are done with that, take the ‘neutral’ pile and place them in the remaining spots.

Keep in mind that you will be ranking the statements in relation to each other, so assigning a negative ranking to the statement does not need to indicate disagreement. It rather means that you agree with that statement slightly less than with the one ranked immediately above it or slightly more than with the one ranked below it.

Also, it doesn't matter if you have more cards in one pile or the other to start with, so don't worry about that. Once the cards are positioned at a certain stop, you will still have a possibility to swap the position of the statements until you are satisfied with your sorting.
It is important that the final sorting represents your personal vision for better human-baboon interactions. There are no “right” or “wrong” answers.
Also, feel free to "think out loud" during the sorting if you wish.

Sort the statements concerning the following question: People and baboons in Cape Town- how could things be better?
Things could be better if…
If you have any questions during the sorting about the statement or the process, just ask.

Click here to return to section 4.6 Data Collection.

# Appendix F: The Parallel Analysis

The parallel analysis demonstrates that there is a less than 1% chance (when using 99th percentile EV) that the factors represent random patterns in the dataset. The parallel analysis engine allows the researcher to provide parameters of their study and based on that calculates eigenvalues from randomly generated correlation matrices. The researcher then compares the results with eigenvalues extracted from their own dataset. The factors with larger observed eigenvalues than the corresponding random eigenvalues are retained (Horn, 1965).

For this study, the 99th percentile EVs for 1000 randomly generated data sets were used as a comparison. The analysis was run on Parallel Analysis Engine by Patil et al. (2017). The results presented below highlight the two factors that satisfy the criterion of parallel analysis, supporting the choice of a two-factor solution.

| Unrotated Factor | Actual EV observed in data | 99th percentile EV in 1000 random datasets |
|---|---|---|
| 1 | 9,848424 | 2.947338 |
| 2 | 3,842465 | 2.609424 |
| 3 | 1,425901 | 2.320801 |
| 4 | 1,33956 | 2.096695 |
| 5 | 1,089918 | 1.928788 |
| 6 | 0,966669 | 1.752489 |
| 7 | 0,929647 | 1.623920 |
| 8 | 0,796912 | 1.496458 |

Click here to return to section 4.7.1 From Q-sorts to Factors.

# Appendix G: Factor Loadings

Factor loadings demonstrate the correlation between a participant's Q-sort and the factors. The asterisk (*) indicates the Q-sorts that loaded significantly (factor loadings are considered significant at +/- 0.35) on the particular factor and were used to create a factor array of that factor. Q-sort from participants 6 and 16 loaded significantly on both factors; however, each was negatively correlated with Factor 1 but positively associated with Factor 2. Because both aligned qualitatively with Factor 2, they were incorporated into the Factor 2 array. The rest of the Q-sorts are considered confounded i.e., they loaded significantly (and positively) on both factors (Watts & Stenner 2012).

| Participant | Factor 1 | Factor 2 |
|---|---|---|
| P1 | 0,7572* | 0,1957 |
| P2 | 0,6654* | 0,0568 |
| P3 | 0,3176 | 0,5990* |
| P4 | 0,7468 | 0,3727 |
| P5 | 0,3517 | 0,4572 |
| P6 | -0,3946 | 0,6363* |
| P7 | 0,5238 | 0,3901 |
| P8 | 0,7232* | 0,0240 |
| P9 | 0,7986* | 0,1945 |
| P10 | 0,7347* | -0,1037 |
| P11 | 0,8212* | 0,0469 |
| P12 | 0,6454 | 0,4399 |
| P13 | 0,6026* | 0,2081 |
| P14 | 0,1933 | 0,7183* |
| P15 | 0,8027* | -0,0213 |
| P16 | -0,4022 | 0,6134* |
| P17 | 0,6533* | 0,1100 |
| P18 | 0,1110 | 0,6516* |
| P19 | 0,5935* | 0,2465 |
| P20 | 0,6534* | -0,1453 |
| P21 | 0,2086 | 0,5605* |
| P22 | 0,2340 | 0,7643* |
| P23 | 0,5279 | 0,5518 |
| P24 | 0,6564* | 0,2997 |
| P25 | -0,1058 | 0,7134* |
| P26 | 0,6336 | 0,4686 |

Click here to return to section 4.7.2 From Factors to Factor Arrays.

# Appendix H: The Crib Sheet for Each Factor

The "crib sheet" helps to identify topics that each factor is polarised about and show how these viewpoints are polarised relative to the other factor in the study. Consensus statements were included (marked in grey) in the crib sheet under "Items ranked lower in Factor X array than all other factor arrays" as recommended in Watts and Stenner (2005).

***Factor 1 Crib Sheet***

**Items ranked at +5:**

7 …if urban baboon policy would pay more attention to how people's behaviour impacts baboon behaviour.

33 ...if authorities would provide baboon-proof bins to all baboon-affected residents- this is one of the easiest solutions to human-baboon conflict. (5)

**Items ranked at +4:**

3 …if we would adjust the baboon management strategy to the context rather than govern with a one-size-fits-all approach. (4)

18 …if authorities would stop treating baboons like criminals. (4)

49 …if residents would feel more civic duty to help minimise negative human-baboon interactions. (4)

**Items ranked higher in Factor 1 array than all other factor arrays:**

2 …if people had a chance to learn more about baboons' value for local biodiversity by experiencing and observing them. (2)

4 …if conflict resolution around baboons would be a collaborative process with disciplined arguments rather than competition over power and resources. (3)

6 …if euthanasia would be used more sparingly and only as a very last resort. (2)

8 …if people would realise that controlling baboons with paintball shots is not successful if what is in the city is attractive to baboons. (1)

9 …if low-income households would get financial assistance to help baboon-proof their homes. (0)

10 …if we would rethink the way we communicate about the baboons so it is not only about risks and conflict. (2)

13 …if we would pay more attention to the actual well-being of baboons and people living near them, instead of numbers to measure the success of the baboon management. (3)

15 …if authorities would work harder to gain public support for the baboon management programme. (0)

16 …if people would be proud of having baboons as their neighbours. (2)

21 …if the management programme would focus on the human and baboon side of the conflict together. (3)

38 …if community attitudes and perceptions toward baboons would be considered before planning management strategies. (1)

40 …if residents could democratically elect a representative to participate in baboon-related decision-making. (0)

42 …if conservation managers would be trained to deal with people, so they can handle arising conflicts better. (0)

44 …if there would be campaigns to make people more tolerant and enthusiastic about baboons. (2)

45 ...if people would understand and respect baboons for their agility, perseverance, patience, and willingness to try anything. (0)

46 …if there would be a balance between encouraging community participation and baboon management according to the accepted policy framework. (1)

48 …if we could focus on underlying, long-running issues and differences in values and power instead of rapid, technical fixes. (1)

50 …if we would accept that society and nature are connected, instead of trying to separate it by violently policing an imagined boundary. (3)

53 …if the use of paintball markers on baboons would be stopped immediately. (-2)

**Items ranked lower in Factor 1 array than all other factor arrays:**

1 ... if baboons would be kept away from urban areas. (-1)

11 …if the baboon management programme would be run without profit-driven companies. (-1)

12 …if we would accept that there is no perfect approach to baboon management - people value things differently. (1)

14 …if the authorities would compensate residents for the damage caused by baboons. (-2)

17 …if people would realise that rangers and those running the baboon management programme actually care deeply about the baboons. (-1)

19 …if people would be more realistic and abandon ideas like "baboons were here first so we must share our space with them". (-2)

20 …if sterilization and contraception would be used more, as a strategy to minimise the baboons' presence in urban areas. (-3)

22 …if we would recognise that one can have mixed feelings about baboons: we can love baboons in their natural habitat, but hate them in our homes. (-1)

23 …if an official ethics review would be done to assess possible impacts of baboon management strategies on animal welfare. (2)

24 …if a single authority was in charge of all baboon-related issues. (-1)

25 …if baboons would again become afraid of humans. (-3)

28 …if the emotional baboon huggers would stop lobbying for baboons. (-2)

29 …if the decision-makers would rely on the advice from professionals, evidence-based research and field experience.(3)

30 …if both humans and animals could adapt and change their behaviour, learn from experience, and pursue their interests. (-2)

31 …if we could build a more intelligent relationship with baboons based on care and empathy. (0)

32 …if an independent organization would monitor the efficiency of the baboon management programme. (1)

34 …if people would stop feeding and habituating baboons to human food and the environment. (1)

35 …if residents could understand that the rangers have a strategy for managing the baboons, and let them do it. (0)

37 …if we would talk more about how humans suffer injuries and costs due to baboon encounters. (-3)

39 …if people would recognise what the current measure of baboon management success is and judge the program accordingly. (-1)

41 …if we could make it more attractive for the dominant baboon to stay away from human environments, so the rest of the troop also stays away. (-1)

43 ...if the baboon management programme would focus more on removing "problem individuals" from baboon troops.(-3)

47 …if baboons would return to the areas where they do ‘belong’- this is how we will solve the true conflict. (-3)

52 …if the people in charge would do their job instead of avoiding responsibilities. (0)

54 …if we would transition to baboon-proof fences in the baboon-affected areas. (-2)

**Items ranked at -4:**

26 …if we would accept that people can’t live side by side with baboons.

27 …if baboons would only allow people to live their lives how they want. (Same as F2)

36 …if we would treat baboons for what they really are- pests and vermin. (Same as F2)

**Items Ranked at -5:**

5 …if people could kill as many baboons as they wish to protect their property and livelihood. (Same as f2)

51 …if people who have actually experienced the tyranny of marauding baboons in their home would be the ones who get to decide what to do with them.

***Factor 2 Crib Sheet***

**Items ranked at +5:**

1 ... if baboons would be kept away from urban areas.

34 …if people would stop feeding and habituating baboons to human food and the environment.

**Items ranked at +4:**

19 …if people would be more realistic and abandon ideas like "baboons were here first so we must share our space with them". (4)

29 …if the decision-makers would rely on the advice from professionals, evidence-based research and field experience.(4)

47 …if baboons would return to the areas where they do ‘belong’- this is how we will solve the true conflict. (4)

**Items ranked higher in Factor 2 array than all other factor arrays:**

17 …if people would realise that rangers and those running the baboon management programme actually care deeply about the baboons. (1)

20 …if sterilization and contraception would be used more, as a strategy to minimise the baboons' presence in urban areas. (3)

22 …if we would recognise that one can have mixed feelings about baboons: we can love baboons in their natural habitat, but hate them in our homes. (3)

25 …if baboons would again become afraid of humans. (3)

26 …if we would accept that people can't live side by side with baboons. (-2)

28 …if the emotional baboon huggers would stop lobbying for baboons. (2)

30 …if both humans and animals could adapt and change their behaviour, learn from experience, and pursue their interests. (0)

35 …if residents could understand that the rangers have a strategy for managing the baboons, and let them do it. (2)

37 …if we would talk more about how humans suffer injuries and costs due to baboon encounters. (0)

39 …if people would recognise what the current measure of baboon management success is and judge the program accordingly. (0)

41 …if we could make it more attractive for the dominant baboon to stay away from human environments, so the rest of the troop also stays away. (3)

43 ...if the baboon management programme would focus more on removing "problem individuals" from baboon troops.(2)

52 …if the people in charge would do their job instead of avoiding responsibilities. (1)

54 …if we would transition to baboon-proof fences in the baboon-affected areas. (3)

**Items ranked lower in Factor 2 array than all other factor arrays:**

2 …if people had a chance to learn more about baboons' value for local biodiversity by experiencing and observing them.(-1)

3 …if we would adjust the baboon management strategy to the context rather than govern with a one-size-fits-all approach. (2)

4 …if conflict resolution around baboons would be a collaborative process with disciplined arguments rather than competition over power and resources. (2)

6 …if euthanasia would be used more sparingly and only as a very last resort. (0)

7 …if urban baboon policy would pay more attention to how people's behaviour impacts baboon behaviour. (-1)

8 …if people would realise that controlling baboons with paintball shots is not successful if what is in the city is attractive to baboons. (-3)

9 …if low-income households would get financial assistance to help baboon-proof their homes. (-1)

10 …if we would rethink the way we communicate about the baboons so it is not only about risks and conflict. (-1)

11 …if the baboon management programme would be run without profit-driven companies. (-1)

12 …if we would accept that there is no perfect approach to baboon management - people value things differently. (1)

13 …if we would pay more attention to the actual well-being of baboons and people living near them, instead of numbers to measure the success of the baboon management. (0)

14 …if the authorities would compensate residents for the damage caused by baboons. (-2)

15 …if authorities would work harder to gain public support for the baboon management programme. (-2)

16 …if people would be proud of having baboons as their neighbours. (-2)

18 …if authorities would stop treating baboons like criminals. (-3)

21 …if the management programme would focus on the human and baboon side of the conflict together. (1)

23 …if an official ethics review would be done to assess possible impacts of baboon management strategies on animal welfare. (2)

24 …if a single authority was in charge of all baboon-related issues. (-1)

31 …if we could build a more intelligent relationship with baboons based on care and empathy. (0)

32 …if an independent organization would monitor the efficiency of the baboon management programme. (1)

33 ...if authorities would provide baboon-proof bins to all baboon-affected residents- this is one of the easiest solutions to human-baboon conflict. (1)

38 …if community attitudes and perceptions toward baboons would be considered before planning management strategies. (0)

40 …if residents could democratically elect a representative to participate in baboon-related decision-making. (-3)

42 …if conservation managers would be trained to deal with people, so they can handle arising conflicts better. (-1)

44 …if there would be campaigns to make people more tolerant and enthusiastic about baboons. (-3)

45 ...if people would understand and respect baboons for their agility, perseverance, patience, and willingness to try anything. (-2)

46 …if there would be a balance between encouraging community participation and baboon management according to the accepted policy framework. (-2)

48 …if we could focus on underlying, long-running issues and differences in values and power instead of rapid, technical fixes. (0)

49 …if residents would feel more civic duty to help minimise negative human-baboon interactions. (1)

50 …if we would accept that society and nature are connected, instead of trying to separate it by violently policing an imagined boundary. (-3)

**Items ranked at -4:**

27 …if baboons would only allow people to live their lives how they want. (Same as F1)

36 …if we would treat baboons for what they really are- pests and vermin. (Same as F1)

51 …if people who have actually experienced the tyranny of marauding baboons in their home would be the ones who get to decide what to do with them.

**Items Ranked at -5:**

5 …if people could kill as many baboons as they wish to protect their property and livelihood. (Same as F1)

53 …if the use of paintball markers on baboons would be stopped immediately.

Click here to return to section 4.7.3 From Factor Arrays to Factor Interpretation.

# Appendix I: Summary of Participants' Demographic Information

| Category | Response | No. Participant |
|---|---|---|
| Age | 18-25 | 2 |
| | 26-33 | 1 |
| | 34-41 | 3 |
| | 42-49 | 2 |
| | 50-57 | 10 |
| | 58-65 | 1 |
| | 66-73 | 5 |
| | 74-81 | 1 |
| | 82+ | 1 |
| Gender | Female | 16 |
| | Male | 10 |
| Highest Completed Education | Primary education | 2 |
| | Secondary education | 4 |
| | Vocational education | 3 |
| | Post-secondary education | 3 |
| | Tertiary education | 14 |
| Background (*) | Business | 7 |
| | Applied Science | 4 |
| | Natural science | 6 |
| | Marketing and Media | 3 |
| | Other | 5 |
| Income | R 1-216 200 | 6 (**) |
| | R 216 201- 227 800 | 2 |
| | R 337 801- 467 500 | 3 |
| | R 467 501- 613 600 | 3 |
| | R 613 601- 782 200 | 0 |
| | R 782 201- 1 656 600 | 4 |
| | R 1 656 601 and above | 3 |
| | Prefer not to say | 3 |
| Troop | Slangkop Troop (SK) | 5 |
| | Da Gama (DG) | 7 |
| | Waterfall (WF) | 3 |
| | Smitswinkel Troop (SWB) | 4 |
| | Cape Town 1 (CT1) | 1 |
| | Cape Town 2 (CT2) | 3 |
| | Multiple troops | 3 |
| Activity in baboon-visited area | Live | 15 |
| | Work | 2 |
| | Both | 9 |

| | | |
|---|---|---|
| Years in the area | 0-4 | 7 |
| | 5-9 | 6 |
| | 10-14 | 3 |
| | 15+ | 10 |
| Baboon Activist | Yes | 3 |
| | No | 13 |
| | I do not know | 10 |

*Note:* One person did not specify their background marked with an asterisk (*). The income range marked with a double asterisk (**) is relatively high because several retired participants did not consider assets an income and they do not have regular salaries.

Click here to return to section 5. Results

# Appendix J: The Factor Arrays

Factor arrays illustrate the ratings of specific statements for each factor. Consensus statements indicated by dark grey are non-significant at $p<0.01$ and the one indicated by light grey is also non-significant at $p<0.05$. All unmarked statements differ significantly at $p<0.01$. The statements are completion of the following sentence: 'People and baboons in Cape Town- how could things be better? Things could be better if…'

| | | Factor | |
|---|---|---|---|
| | Statement | 1 | 2 |
| 1 | ... if baboons would be kept away from urban areas. | -1 | 5 |
| 2 | …if people had a chance to learn more about baboons' value for local biodiversity by experiencing and observing them. | 2 | -1 |
| 3 | …if we would adjust the baboon management strategy to the context rather than govern with a one-size-fits-all approach. | 4 | 2 |
| 4 | …if conflict resolution around baboons would be a collaborative process with disciplined arguments rather than competition over power and resources. | 3 | 2 |
| 5 | …if people could kill as many baboons as they wish to protect their property and livelihood. | -5 | -5 |
| 6 | …if euthanasia would be used more sparingly and only as a very last resort. | 2 | 0 |
| 7 | …if urban baboon policy would pay more attention to how people's behaviour impacts baboon behaviour. | 5 | -1 |
| 8 | …if people would realise that controlling baboons with paintball shots is not successful if what is in the city is attractive to baboons. | 1 | -3 |
| 9 | …if low-income households would get financial assistance to help baboon-proof their homes. | 0 | -1 |
| 10 | …if we would rethink the way we communicate about the baboons so it is not only about risks and conflict. | 2 | -1 |
| 11 | …if the baboon management programme would be run without profit-driven companies. | -1 | -1 |
| 12 | …if we would accept that there is no perfect approach to baboon management - people value things differently. | 1 | 1 |
| 13 | …if we would pay more attention to the actual well-being of baboons and people living near them, instead of numbers to measure the success of the baboon management. | 3 | 0 |
| 14 | …if the authorities would compensate residents for the damage caused by baboons. | -2 | -2 |
| 15 | …if authorities would work harder to gain public support for the baboon management programme. | 0 | -2 |
| 16 | …if people would be proud of having baboons as their neighbours. | 2 | -2 |

| | | | |
|---|---|---|---|
| 17 | …if people would realise that rangers and those running the baboon management programme actually care deeply about the baboons. | -1 | 1 |
| 18 | …if authorities would stop treating baboons like criminals. | 4 | -3 |
| 19 | …if people would be more realistic and abandon ideas like "baboons were here first so we must share our space with them". | -2 | 4 |
| 20 | …if sterilization and contraception would be used more, as a strategy to minimise the baboons' presence in urban areas. | -3 | 3 |
| 21 | …if the management programme would focus on the human and baboon side of the conflict together. | 3 | 1 |
| 22 | …if we would recognise that one can have mixed feelings about baboons: we can love baboons in their natural habitat, but hate them in our homes. | -1 | 3 |
| 23 | …if an official ethics review would be done to assess possible impacts of baboon management strategies on animal welfare. | 2 | 2 |
| 24 | …if a single authority was in charge of all baboon-related issues. | -1 | -1 |
| 25 | …if baboons would again become afraid of humans. | -3 | 3 |
| 26 | …if we would accept that people can't live side by side with baboons. | -4 | -2 |
| 27 | …if baboons would only allow people to live their lives how they want. | -4 | -4 |
| 28 | …if the emotional baboon huggers would stop lobbying for baboons. | -2 | 2 |
| 29 | …if the decision-makers would rely on the advice from professionals, evidence-based research and field experience. | 3 | 4 |
| 30 | …if both humans and animals could adapt and change their behaviour, learn from experience, and pursue their interests. | -2 | 0 |
| 31 | …if we could build a more intelligent relationship with baboons based on care and empathy. | 0 | 0 |
| 32 | …if an independent organization would monitor the efficiency of the baboon management programme. | 1 | 1 |
| 33 | ...if authorities would provide baboon-proof bins to all baboon-affected residents- this is one of the easiest solutions to human-baboon conflict. | 5 | 1 |
| 34 | …if people would stop feeding and habituating baboons to human food and the environment. | 1 | 5 |
| 35 | …if residents could understand that the rangers have a strategy for managing the baboons, and let them do it. | 0 | 2 |
| 36 | …if we would treat baboons for what they really are- pests and vermin. | -4 | -4 |
| 37 | …if we would talk more about how humans suffer injuries and costs due to baboon encounters. | -3 | 0 |
| 38 | …if community attitudes and perceptions toward baboons would be considered before planning management strategies. | 1 | 0 |
| 39 | …if people would recognise what the current measure of baboon management success is and judge the program accordingly. | -1 | 0 |
| 40 | …if residents could democratically elect a representative to participate in baboon-related decision-making. | 0 | -3 |

| | | | |
|---|---|---|---|
| 41 | …if we could make it more attractive for the dominant baboon to stay away from human environments, so the rest of the troop also stays away. | -1 | 3 |
| 42 | …if conservation managers would be trained to deal with people, so they can handle arising conflicts better. | 0 | -1 |
| 43 | ...if the baboon management programme would focus more on removing “problem individuals” from baboon troops. | -3 | 2 |
| 44 | …if there would be campaigns to make people more tolerant and enthusiastic about baboons. | 2 | -3 |
| 45 | ...if people would understand and respect baboons for their agility, perseverance, patience, and willingness to try anything. | 0 | -2 |
| 46 | …if there would be a balance between encouraging community participation and baboon management according to the accepted policy framework. | 1 | -2 |
| 47 | …if baboons would return to the areas where they do ‘belong’- this is how we will solve the true conflict. | -3 | 4 |
| 48 | …if we could focus on underlying, long-running issues and differences in values and power instead of rapid, technical fixes. | 1 | 0 |
| 49 | …if residents would feel more civic duty to help minimise negative human-baboon interactions. | 4 | 1 |
| 50 | …if we would accept that society and nature are connected, instead of trying to separate it by violently policing an imagined boundary. | 3 | -3 |
| 51 | …if people who have actually experienced the tyranny of marauding baboons in their home would be the ones who get to decide what to do with them. | -5 | -4 |
| 52 | …if the people in charge would do their job instead of avoiding responsibilities. | 0 | 1 |
| 53 | …if the use of paintball markers on baboons would be stopped immediately. | -2 | -5 |
| 54 | …if we would transition to baboon-proof fences in the baboon-affected areas. | -2 | 3 |

Click here to return to section 5. Results

# Appendix K: The Positionality Statement

As a white, female student/researcher coming from Global North to study a contested topic in Global South it was crucial to constantly reflect on my positionality. This was especially important since the people I interacted with represented various sets of identities, thus their perceptions of me varied. For example, when interacting with most of the residents from baboon-visited areas, my identity as an "outsider" was influential in determining my interactions with participants. In fact, one of the most common questions was *"Why would a person who lives in Sweden like to study baboons?"*. Being an outsider helped to reposition the power dynamics between me and the participants because I was not the researcher but rather a student and the participants were the teachers. Participants' level of engagement confirmed to me that having that outsider position was advantageous, as they shared with me more in-depth reflections than they probably would with someone who knows the case very well. The average age difference could also potentially exacerbate the student-teacher dynamics.

However, I observed different dynamics when interacting with rangers. Being a ranger is considered rather low skill labour, mostly done by black males. In my interactions with them, I could sense that some are a bit more intimidated and took more time before they became comfortable. This is probably due to their perception of me as a researcher coming from overseas which is associated with higher status. However, this was not always the case, and the dynamics were very different between me and field managers who all have a higher degree and good understanding of the research process. In my interactions with them, the power dynamics were rather equal.

The reflection on one's positionality is not only useful when thinking of power dynamics but also access. The set of my identities made it more difficult for me to access a certain community, consequently affecting the representation of that community in my research. The access was not only restricted because it was not safe for me as a white female from outside of the community to be there, but also because people are not used to speaking with strangers, especially from academia, thus access is usually only possible through someone else from the community.

I also realised that during the research process I was still developing my own researcher identity. As a student with mostly quantitative experience based on a positivist approach, I

experience a complete shift from “value-free”, generalizable acquisition of knowledge to value-laden and contextual acquisition. But this shift was gradual, and I sometimes found myself falling back into my “old” assumptions. Thus, the practice of reflexivity was especially important for me, so I could become aware of these assumptions, how they shifted along the research process, and what impact these shifts had. In the end, that conscious awareness made me more capable of fully embracing the qualitative aspects of the Q method, as I was actively putting more attention on the aspects related to meaning, rather than just statistics.

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# Appendix L: The Ethical Review- Final Review

*Cultural and social norms*

It is quite a common practice in South Africa for the researcher to visit participants at home for the date collection. This was new to me and at first, I was keener to schedule meetings in public cafes until I realised that visiting participants is completely acceptable in the local context. I let participants choose the most convenient place for them or suggested one which is close to their location. On one occasion, I had a meeting with someone living in a community that I was told not to visit by myself as it can be quite dangerous for a Caucasian "outsider". Thus, I suggested meeting at the local farm that had a café with the outdoor space. However, at that time I did not yet know the place, and when I arrived, I realised that it is rather dominated by wealthy, white guests. The only thing that I knew about the person I was meeting was that they are from an area that is considered lower social-economic status. I became worried if the person would feel comfortable in this setting and as I was waiting, I thought of how to mitigate this situation. In the end, the person felt comfortable, and it turned out s(he) was there before. I did not think about this type of situation when preparing my ethics review, thus did not have a clear idea of how to deal with it, other than being humble and learning from this experience by being more considerate in the future.

*Participants' privacy and recruitment*

Participants of my study were very willing and active, and they truly wanted to help with participant recruitment and communication. WhatsApp is an extremely popular way of communicating in South Africa, and a bunch of potential participants suggested creating a WhatsApp group for recruited residents. This posed an ethical dilemma. On one hand, I had a responsibility to protect the privacy of my participants and on the other, I did not want to offend participants who were being helpful. Since the suggestion came from potential participants that knew each other very well, and one was recommended by the other, I decided to agree to the WhatsApp group but made it clear that it is only for basic communication about the project and not baboon-related discussions or further details sharing. Participants were very understanding and respected my concerns. I did not use that WhatsApp group for any other participants, just that limited group that already knew each other. The ethics review deals extensively with my

role as a researcher in handling private information which helped me with this decision, but it does not necessarily make you think about the situation in which participants are suddenly taking a more active role in sharing private information.

*Consent*

During my field visits with rangers, the act of seeking consent was sometimes tricky because we often started with a casual talk and then suddenly, we transitioned to a more "interview-style" conversation. It was difficult to break the flow of the conversation to ask for consent. In fact, during my first visit, I proceeded with the conversation and only afterwards sought consent. However, I did have a prior consent of their employer. Yet, I quickly realised that having the consent first, even when disrupting the flow, was a better practice, as it helped rangers and field managers to understand what the aim of our conversation is, what their rights are in this situation and how they can execute them. This is exactly the purpose of the consent, and I knew that before, however, in that context, having formal guidelines was still overruled by the dynamics of the situation.

*Covid-19*

Global pandemic can be a tricky time to conduct research and can cause a lot of moral dilemmas. For example, if you were a second contact with someone *potentially* Covid positive, are you continuing with a data collection? What about if you were in contact with someone who has symptoms, but tested negative? Tests are not always reliable, so what do you do? There is a thin line between being vigilant and paranoid. These situations and considerations were something that I was confronted with regularly. For example, when I was informed that I was in a second contact with someone who tested positive, I decided to test myself, even if I did not have symptoms, and postponed the interviews that I had until I got the test results. I also had to inform people that I have interviewed between the time I was in contact with the person who was Covid-positive, and the time I was made aware of it. It was probably overcautious behaviour on my side, but as a researcher in that situation, I felt extra responsibility to act most appropriately, especially in a country with low vaccination rates at the time. In my ethics review, I dealt with Covid-19 situations rather superficially and did not

think about all these potential situations, but in hindsight, it was a good decision to act on the side of caution.

Stockholm Resilience Centre
Kräftriket 2B, Stockholm University, SE 106 91
info@stockholmresilience.su.se
www.stockholmresilience.su.se

A PARTNER WITH
The Beijer Institute of Ecological Economics
Kungl. Vetenskaps-Akademien
The Royal Swedish Academy of Sciences